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CHANGES IN PATTERNS OF THINKING PRODUCED BY A SPECIFIC PROBLEM SOLVING APPROACH IN ELEMENTARY ARITHMETIC

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Teaching a child how to solve an arithmetic problem is analogous to teaching him how to think. This is because every problem is unique. If the combination of factors that make up a situation in the big wide world of real events is not unique it would not be a problem, it would be merely an exercise.

Any problem solving approach is concerned with the development of patterns of thinking. This development may be willy-nilly, and grow like Topsy, or it may be based upon considered theories relative to the way in which children form concepts. Piaget supplies a most pertinent explanation of the way in which "childish thought" is formed. He says,[1]

> So that everything we have said in this work is to show that the thought of the child is less conscious than ours has ipso facto led us to the conclusion that childish thought is devoid of logical necessity and genuine implication; it is nearer to action than ours, and consists simply of mentally pictured manual operations, which, like the vagaries of movement, follow each other without any necessary succession.

Every problem has some kind of action. There is something going on. This action may be physical; it may be imagined. The action may be a real movement or manipulation, or it may be a comparison, a matching, a correspondence. These actions, in turn, are related to specific mathematical models or structures. Although there are billions of arithmetical problems, each unique, there are relatively few kinds of actions, each related to a mathematical structure. It would be possible to teach directly each mathematical structure related to each kind of action. Can we then ferret out these actions and relate each one to a mathematical model? In this direction there lies some hope.

J. S. Bruner,[2] in his book, "The Process of Education", develops this idea of the need to teach structure rather than an ever-expanding and ever-changing mass of details. He says,

> Virtually all of the evidence of the last two decades on the structure of learning and transfer has indicated that, while the original theory of formal discipline was poorly stated in terms of the training of faculties, it is indeed a fact that massive general transfer can be achieved by appropriate learning, even to the degree that learning properly under optimum conditions leads one to "learn how to learn." These studies have stimulated a

1. Piaget, J., *Judgment and Reasoning in the Child.* New York, Harcourt, Brace and Co., 1928.
2. Bruner, J. S., *The Process of Education,* Cambridge, Harvard University Press, 1960, pp. 6, 7, 12.

> renewed interest in complex learning of a kind that one finds in schools, learning designed to produce general understanding of the structure of a subject matter. Interest in curricular problems at large has, in consequence, been rekindled among psychologists concerned with the learning process.
>
> . . . To learn structure, in short, is to learn how things are related.
>
> . . . The teaching of learning of structure, rather than simply the mastery of facts and techniques, is at the centre of the classic problem of transfer. There are many things that go into learning of this kind, not the least of which are supporting habits and skills that make possible the active use of the materials one has come to understand. If earlier learning is to render later learning easier, it must do so by providing a general picture in terms of which the relations between things encountered earlier and later are made as clear as possible.
>
> Given the importance of this theme, much too little is known about how to teach fundamental structure effectively or how to provide learning conditions that foster it.

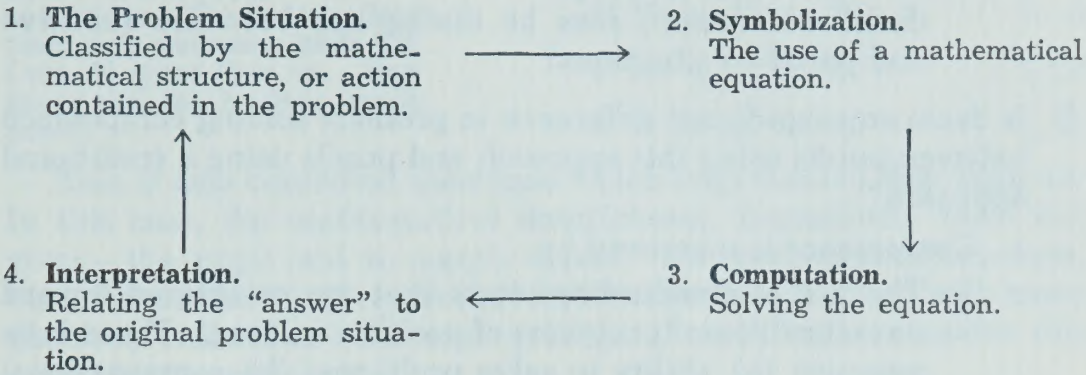
The "Seeing Through Arithmetic"[3] program has classified all problem situations according to the "action" inherent in the problem. This action in turn is related to a mathematical model. In brief, the actions and the related models are:

Action	Mathematical Model
1. Additive: a combining of groups.	$n(A_1) + n(A_2) = n(A)$ (Translate: Number in subgroup A_1, plus number in subgroup A_2 equals number in group A)
2. Subtractive: removing a subgroup from a total group.	$n(A) - n(A_1) = n(A_2)$
3. Multiplicative: combining of equal groups.	(No. of groups) $\times$ n(each subgroup) = n(total group)
4. Divisive: removing of equal subgroups.	n(total group) $\div$ n(each subgroup) = No. of subgroups
5. Comparison: more or fewer than; one-to-one correspondence and removal of matched pairs.	n(larger group) — n(matched pairs) = n(excess or deficiency)
6. Ratio: many-to-many correspondence.	$\frac{n(A_1)}{n(B_1)} = \frac{n(A_2)}{n(B_2)}$

In each case students are taught to follow a definite thinking pattern. This begins with an analysis of the problem situation, to determine the *action* of the problem and so to identify the mathematical structure. From here, the students translate the situation from verbal symbols into the language of mathematics. This means expressing the problem situation by means of a mathematical sentence—an *equation* if you like. The operation in the equation will be consistent with the action of the problem. The student is now taught the skill necessary to solve the equation—to find the replacement for the unknown. Finally he takes this solution and relates

3. Hartung, M. L., Van Engen, H., Knowles, Lois, *Seeing Through Arithmetic, Books 3, 4, 5, and 6.* Chicago, Scott, Foresman and Co., 1955.

it to the situation in the original context of the problem. Diagrammatically, this approach may be represented:


1. The Problem Situation.
Classified by the mathematical structure, or action contained in the problem.
2. Symbolization.
The use of a mathematical equation.
3. Computation.
Solving the equation.
4. Interpretation.
Relating the "answer" to the original problem situation.

In May, 1962, the writer selected a group of 75 grade VI students in two elementary schools in Edmonton, who had been taking the "Seeing Through Arithmetic" program for nearly three years. This comprised his "Experimental Group." He also selected a group of 75 grade VI students in two elementary schools in Calgary, who had been taking the traditional arithmetic program. This comprised his "Control Group." Consideration was given to matching the teachers involved, in training, experience and general competence. The students were then compared by (a) I.Q. scores, (b) Rating by teachers, (c) A standardized Vocabulary test. Results indicated that the two groups were evenly matched.

Using these two groups, the writer then attempted to investigate the following specific problems:

A. Does the above-described problem solving program produce any patterns of thinking that can be identified as related to this particular program, and which are different from those patterns of thinking promoted by a more traditional approach to problem solving?

The specific patterns of thinking that are under consideration are:

1. Abstraction.
   Do pupils make the transition from the perceptual recognition of the problem situation to the abstract mathematical symbolization of this situation? In making this abstraction, is there a consistent relationship between the action which the problem situation contains and the mathematical model used to symbolize the problem? Do abstract mathematical symbols have clearly defined referents in the minds of the pupils?
2. Many-to-many Correspondence.
   Do the pupils use many-to-many correspondence, (Ratio thinking), in thinking about the action of a problem?

3. Quotitive and Partitive Division.
   As a child "mentally pictures the manual operations" of a divisive situation, does he distinguish between quotitive and partitive situations?

B. Is there any significant difference in problem solving competence between pupils using this approach and pupils using a traditional approach?

Competence is measured by,

1. The use of standardized tests that are orientated toward more traditional programs of problem solving. These tests measure (a) ability to solve problems, (b) computational skills and accuracy, (c) the understanding of number concepts.
2. The ability to solve problems that are more abstract.
3. The ability to solve more difficult problems that contain certain basic structures.

The following tests were administered to each group:

1. Vocabulary test: subtest V of Iowa Tests of Basic Skills, Form 1.
2. Arithmetic Concepts: subtest A-1 of Iowa Tests of Basic Skills, Form 1.
3. Problem Solving: subtest A-2 of Iowa Tests of Basic Skills, Form 1.
4. Computation: subtest Arithmetic-C, S R A Achievement Series, Form 6 - 9.
5. Analogies Test: subtest of Laycock's Test of Mental Abilities.
6. Arithmetic Test A: designed by the writer.
7. Arithmetic Test B: designed by the writer.

Results of Investigation

For Problem A-1.

Problem A-1 was investigated by using the results of questions in test A which contained additive actions and subtractive actions. Pupils were asked to select from a choice of four, the best mathematical description of the problem. An example of each structure follows:

Example 1. (Test A, Question 1).

1. A contractor is building a brick chimney. He needs 7,200 bricks for the job. A trucker has delivered 3 loads of bricks with 2,000 bricks in each load. How many more bricks does the contractor need?

   a. $7{,}200 - (3 \times 2{,}000) = N$ (.....)

   b. $(3 \times 2{,}000) + N = 7{,}200$ (.....)

   c. $7{,}200 - N = (3 \times 2{,}000)$ (.....)

   d. $N + (3 \times 2{,}000) = 7{,}200$ (.....)

Example 2. (Test A, Question 5).

A flock of 72 geese flew over a field where a group of hunters were hiding. The hunters fired their guns and many birds fell. Only 58 geese flew on. How many did the hunters knock down?

a. $72 - 58 = N$ (.....)

b. $72 - N = 58$ (.....)

c. $58 + N = 72$ (.....)

d. $N + 58 = 72$ (.....)

Test B also contained questions which augumented this analysis. In this case, the mathematical descriptions, (equations) were not given—the pupil had to supply them. The problems, themselves, varied from those with typical, familiar situations to those with more abstract, unfamiliar ideas and symbols. For example, consider this additive type problem.

Example 3. (Test B, Question 2).

In Bongoland, Mr. Oog went to catch enough fish to feed his large family. He wanted to return with "loppa" fish. (Loppa is a number in Bongoland language. It is written Z). After 2 hours Mr. Oog had caught "lummo" fish. (Lummo is another number in Bongoland language. It is written ϕ). How many more fish did Mr. Oog need to catch in order to have as many as he wanted to feed his family?

A comparison of the experimental and control group was made using Chi-square.

In summary, the experimental group and the control group differ from each other at the .01 level of significance in their choice of mathematical models (equations) for problems that have an additive or subtractive structure, with the experimental group using a model consistent with the action of the problems, and the control group using a model that relates to the computational process. For problems involving unfamiliar symbols, the two groups differ at the .04 level of significance, relative to the number of correct solutions, in favour of the experimental group.

For Problem A-2.

Problem A-2 was analyzed by considering the results of questions in Test A that involved many-to-many correspondence, that is, ratio thinking. Consider this example.

Example 4. (Test A, Question 4).

There are 8 kilometers in 5 miles. How many miles are there in 40 kilometers?

a. $\frac{5}{8} \times 40 = N$ (.....)

b. $\frac{8}{5} = \frac{40}{N}$ (.....)

c. $\frac{40}{8} \times 5 = N$ (.....)

d. $40 \div \frac{8}{5} = N$ (.....)

Test B presented the same type of problem with unfamiliar symbols or unfamiliar context.

Consider these three examples:

Example 5. (Test B, Question 5).
There are 1,760 yards in a mile. How many miles are there in 1,320 yards?

Example 6. (Test B, Question 6).
On the planet Mars, the Martians measure distances in **kopecs** and in **pecans.** There are 16 pecans in 3 kopecs. How many kopecs are there in 10 pecans?

Example 7. (Test B, Question 7).
Chemists tell us that it takes 177 grams of salt to produce 71 grams of Chlorine. How much salt is needed to manufacture 50 tons of Chlorine?

The two groups were compared by using a Chi-square technique. The results indicated that the experimental group used "ratio-thinking" in solving problems of this type, whereas the control group used a variety of approaches including "the rule of three." The experimental group demonstrated a statistically significantly higher incidence of correct solutions. The following table gives the results for the above three examples.

TABLE A

A COMPARISON OF THE EXPERIMENTAL AND CONTROL GROUPS, RELATIVE TO THE NUMBER OF CORRECT SOLUTIONS TO THREE PROBLEMS INVOLVING MANY-TO-MANY CORRESPONDENCE

	Example 5.		Example 6.		Example 7.	
	Correct	Wrong	Correct	Wrong	Correct	Wrong
Experimental Group	47	28	44	31	21	54
Control Group	12	63	9	66	0	75
χ^2	32.3		33.7		22.1	

Significantly different at .01 level.

Because many-to-many correspondence involves the comparison of groups and demands a careful consideration of the association between referents and symbols, this pattern of thinking should transfer to the comparison of non-mathematical groups and give increased competence in relating one factor to another.

To investigate this hypothesis the two groups were compared on the results of a standardized analogy test. The subtest on analogies from Laycock's Test of Mental Abilities was used.

An analysis of convariance with vocabulary results as the covariant, indicated a statistically significant difference in favour of the experimental group.

In summary, many-to-many correspondence is a pattern of thinking that is promoted by the "Seeing Through Arithmetic" program, and results in the choice of different mathematical models for certain problem situations, and in a higher proportion of correct solutions, than does the traditional "rule of three" pattern of thinking. Many-to-many correspondence thinking transfers to making logical associations between non-mathematical groups, and results in an increased competence in this area.

For Problem A-3.

Problem A-3 was investigated by the results of certain questions in Test A and in Test B with divisive structures. These results indicated that the experimental group was more cognizant of the referents for the mathematical symbols used to represent a divisive situation than was the control group, with some indication that they found it difficult to differentiate between a quotitive and partitive structure.

For Problem B-1.

Of course, a new thinking pattern for solving problems, in itself, would not be justifiable if it resulted in lower competence in mathematics. The writer therefore gave the two groups a series of standardized tests in Arithmetic Concepts, in Problem Solving and in Computation, to measure the mathematical competence of the groups. The results were analyzed by an analysis of covariance with Vocabulary scores as the covariant. The tests, on Arithmetic Concepts, and on Problem Solving indicated no significant difference between the groups. The test on Computation, indicated a difference at the .10 level of significance in favour of the experimental group. This is marginal significance, but an interesting result nonetheless.

These standardized tests have been designed for a traditional approach to problem solving rather than to an equation approach. A fair interpretation would be that the experimental group measured up to the control group even though the measuring instrument was designed for the traditional approach to problem solving.

For Problem B-2.

If one of the long-term objectives of elementary arithmetic instruction is to promote the ability to work with abstractions, then the effectiveness of any program can be assessed by measuring the com-

petence of pupils in solving problems that are more abstract. Arithmetic problems are more abstract if the setting is imaginative or unreal, and if unfamiliar symbols are used.

Test B contained questions to measure this kind of competence. The reader is referred to examples 5 and 6 above and to the results in Table A. This (and other similar analyses) indicated that the experimental group could cope better with more abstract problems than could the control group.

For Problem B-3.

Finally, the two groups were compared relative to their competence in solving very difficult problems, such as example 7 above. This, and similar analyses, indicated that the experimental group showed greater competence than did the control group in solving more difficult problems with a familiar mathematical structure.

Conclusion.

The most interesting finding of this study is that many-to-many correspondence is a pattern of thinking that can be developed with elementary grade pupils.

The correspondence mathematical structure—the proportionality relation—"fits" the action of a wide variety of problems and should be introduced into the elementary arithmetic curriculum. This approach obviates the traditional method of using the "rule of three" which is an awkward model, easily confused.

Especially for problems of this structure, the equation approach gives to the elementary grade pupil a powerful technique which enables him to solve problems with the sophistication of a true mathematician.

THE ROLE OF INTELLIGENCE "C" IN THE SELECTION OF CHILDREN FOR REMEDIAL TEACHING OF READING

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The Problem

These are in the literature many studies of attempts to remedy backwardness in reading with evidence both for and against the usefulness of remedial education. (1a., 2, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22)

Until recently it has been assumed that the most that could be attempted was to narrow the gap between the Intelligence Quotient and the Reading Quotient. (3, 18, 19, 24) Implicit in this argument is the notion that intelligence as measured by an intelligence test is in some way causal and that the reason for the IQ-RQ discrepancy is some countervailing force: "emotional disturbance", "poor home environment", "poor teaching" and the like.

It has been argued by Vernon (23, 24), however, on the basis of work by Hebb that the internal causal factor is Intelligence "A" (the excellence of the function of the Nervous system) and that Intelligence "B", which is the result of the interaction between Intelligence "A" and the environment, is not causal with respect to scholastic attainment. Intelligence "B" is denoted as the intelligence used in practice. But even this intelligence "B" is not what is "measured" by the "intelligence test". The content of an intelligence test may be considered as a sample of some aspects of intelligence "B". This sample we may call Intelligence "C". It is, incidentally, a somewhat dubious procedure to consider that an intelligence test "measures" in the same way as a rule measures. Rules may vary in size and layout but they do at least have the same content (British or metric) as each other. Intelligence tests vary in content and we have, therefore, as many intelligences "C" as there are tests.

As Alfred Binet pointed out in 1905, in speaking of his own scale "The scale properly speaking does not permit the measure of intelligence, because intellectual qualities are not superposable,—but are on the contrary, a classification—." (1)

The writer found that the Remedial Teaching Service in Bolton, England, had success during the year 1958 to 1960 (for other years see reference 20) in raising the reading quotients of many children in addition to other worthwhile effects as far as the children's personality and attainment were concerned. Some idea of these results

can be obtained from Tables 1, 2 and 3. It will be noted that non-verbal intelligence tests were used extensively for selection purposes.

The children referred to in Table 1 are children aged 8 to 10 years who were in 7 full-time remedial classes with 20 children in each class. They had been selected on the basis of the discrepancy between their C.A. and R.A. (Schonell Graded Word Test) being 2 years, and on the fact that they obtained an IQ of 85+ on the Sleight Non-Verbal Intelligence Test.

TABLE 1.

IMPROVEMENT IN READING AGE ON SCHONELL G.W. TEST

Improvement after attendance for	No. of Children	Least Improvement	Greatest Improvement	Average Improvement
2 terms	15	1.0 yrs.	5.1 yrs.	2.1 yrs.
3 terms	59	0.8 yrs.	5.3 yrs.	2.4 yrs.
5 terms	56	0.2 yrs.	5.2 yrs.	2.8 yrs.

The children referred to in Table 2 were selected in the same way as those in Table 1 but were remedially educated by way of remedial groups of 4 - 6 children per group meeting for 1 hour per day in 4 schools.

TABLE 2.

Improvement after attendance for	No. of Children	Least Improvement	Greatest Improvement	Average Improvement
1 term	4	0.2 yrs.	0.5 yrs.	0.35 yrs.
2 terms	5	0.3 yrs.	2.2 yrs.	1.3 yrs.
3 terms	43	0.5 yrs.	4.4 yrs.	2.1 yrs.

The children referred to in Table 3 were aged 11-15 years. They were remedially educated in groups of approximately 6 children per group in 15 schools. They were selected on the basis of (a) a score of under 10 years on the Schonell Silent B Test of Reading Comprehension; (b) a discrepancy of 2 years between their C.A. and Schonell G.W. R.A.; and (c) an I.Q. of 85+ on the Jenkins Non-Verbal Intelligence Test.

TABLE 3.

Improvement after attendance for	No. of Children	Least Improvement	Greatest Improvement	Average Improvement
1 term	66	Nil	4.9 yrs.	1.3 yrs.
2 terms	96	0.2 yrs.	4.5 yrs.	1.75 yrs.
3 terms	402	Nil	4.8 yrs.	2.00 yrs.

Being motivated by the following three considerations the writer decided to test the relationship between intelligence as measured and improvement in reading as measured.

(a) a belief in the proposition that there was no necessary correlation of any practical importance between intelligence as measured and improvement in reading as a result of remedial education (25),

(b) the fact that the staff of remedial teachers frequently reported a lack of correspondence between the progress made by children and that presumably predicted by their I.Q.s, and

(c) the cost, in terms of staff, time and money using the intelligence tests.

Method

(1) All of the first year input into the Secondary Modern Schools of Bolton who are routinely screened for reading difficulties were given the Schonell Silent B test as usual.

(2) Those who scored below 10 years on this test were given
(a) the Raven Progressive Matrices (1956 version),
(b) the Mill Hill Vocabulary Scale—Oral Definitions Form, and
(c) the Holborn Reading Scale.

(3) The children involved who attended 6 of the schools were retested, on the Holborn Scale, 10 months later.

(4) When those, whose scores could not be obtained for one reason or another, were eliminated 100 children were available, 70 boys, 30 girls.

(5) The increase in reading age was correlated with
(a) Raven P. M. scores.
(b) Mill Hill Vocabulary scores
(c) the combined Raven and Mill Hill scores
i.e. both scores added together).

Raw scores were used for the Raven and Mill Hill tests as the age range involved was less than one year.

(6) To check the possibility of distortion due to the fact that 35 pupils left the remedial groups after 5 months tuition, the increases in reading age gained by the group (again on the Holborn scale) were correlated with their scores in the combined intelligence test.

Results

1. The mean increase in R.A. of the 10 month group was 1.8 years, S.D. of 0.85; the mean score on the combined intelligence test was 43.25 with a S.D. of 8.95.

2. The correlation of increase in R.A. and P.M. score was found to be r = 0.35 (significant at 0.1% level).*
3. The correlation of increase in R.A. and Mill Hill vocabulary score was r = 0.12 (not significant at 5% level).
4. The correlation between increase in R.A. and the combined score was r = 0.37 (significant at 0.1% level).
5. In the 5 month group the mean increase in R.A. was 1.5 yrs., S.D. 1.27 yrs., the mean score on the combined intelligence test was 48.40, S.D. of 8.60.
6. The correlation between increase in R.A. and the combined score for the 5 month group was r = —0.001 (not significantly different from zero).
7. If one places the frequencies in two by two tables the results are:

10 MONTH GROUP — INCREASE IN R.A.

Combined Intelligence Score	0.0 — 1.5 yrs.	1.51 — 5.0 yrs.	Σ
46-65	13	35	48
16-45	23	29	52
Σ	36	64	100

5 MONTH GROUP — INCREASE IN R.A.

Combined Intelligence Score	0.0 — 1.5 yrs.	1.51 — 3.0 yrs.	Σ
46-65	13	8	21
31-45	7	7	14
Σ	20	15	35

*All correlations were carried out by the Pearson Product Moment Method.

Discussion

It is obvious that if an intelligence test accounts for between zero and 14% of the variance of reading age increase it is of little practical use in the prediction of reading gain.

Furthermore it can be seen that if one had taken note of the intelligence scores of the 10-month group, from a selection viewpoint, and, say, excluded those with a score below 45, 29 pupils, who benefited to the extent of improving their R.A. over 1½ years during the 10 month period, would have been penalised.

The net gain would have been to exclude 23 pupils who did not gain as much as 1½ years of R.A., though 9 of these did in fact gain as much as 1 year.

Similarly in the 5 month group 7 who gained more than 1½ years R.A. would have been excluded in order to exclude 7 who did not.

In other words, the use of the combined intelligence test as a selective procedure would have resulted in the exclusion of 36 and the inclusion of only 43 out of the 79 children who improved their R.A. more than 1½ years, even though these children benefited approximately equally from the remedial teaching.

These results were obtained using tests with good validity and reliability (ref. 4, 5, 9). How much worse is the situation in many schools where tests of dubious validity and reliability are used?

REFERENCES

1. Binet, Alfred and Simone, Theodore Méthodes nouvelles pour le diagnostic du niveau intellectuel des anormaux. *Annee Psychologique* 1905, 12, 191-244.

1.a. Birch, L. B. "The Remedial Treatment of Reading Disability." *Educational Review* 1949, 1, 107-118.

2. Birch. L. B. Comment on the Article "An Experimental Evaluation of Reading Disability." *British Journal Educational Psychology* 1953, 23, 56-57.

3. Burt, C. Schonell, F. J., et al "The Relationship Between Ability and Attainment." *Bulletin of National Foundation for Educational Research* 1957, 9, 8-33.

4. Krisen Buros, O. *3rd Mental Measurements Year Book.* 1949 Gryphon Press.

5. Krisen Buros, O. *4th Mental Measurements Year Book.* 1953 Gryphon Press.

6. Collins, J. E. "Remedial Educational Provision for Children of Average and Above Average Intelligence." *Educational Review* 1953, 6, 142.

7. Curr, W. and Gourlay, N "An Experimental Evaluation of Remedial Education." *British Journal of Educational Psychology* 1953, 23, 45-55.

8. Dolch, E. W. "Success in Remedial Reading." *Elementary English* 1953, 30, 133-137.

9. Elley, W. B. and MacArthur, R. S. "The Standard Progressive Matrices As a Culture-Reduced Measure of General Intellectual Ability." *Alberta Journal of Educational Research* 1962, 8, 54-65.

10. Fernald, G. M. *"Remedial Techniques in Basic School Subjects."* McGraw-Hill N.Y. 1943.
11. Gates, A. J. *"The Improvement of Reading"* Macmillan N.Y. 1935.
12. Henry, N. B. ed. "Development in and Through Reading." *N.S.S.E. Yearbook* 1960, Part 2 Ch. 20—Corrective and Remedial Instruction (H. M. Robinson).
13. Kellmer-Pringle, M. L. and Gulliford, R. A Note on "An Experimental Evaluation of Remedial Education." *British Journal of Educational Psychology*, 1953, 23, 196-199.
14. Kellmer-Pringle, M. L. and Bossio, V. "A Study of Deprived Children, Part II: Language Development and Reading Attainment." *Vita Humana* 1958, 1, 142-170.
15. Kellmer-Pringle, M. L. and Sutcliffe, B. *"Remedial Education—An Experiment."* Caldecott Community and Department of Child Study, Univ, Birmingham Inst. Educ. 1960.
16. K. Lovell "The Effects of Remedial Work in Basic Subjects on Children who are Backward with respect to their Age Groups." *Bulletin University Leeds Institute of Education* Part 1 1960, No. 34, pp. 1-4, Part 2 1960, No. 35, pp. 1-4.
17. Malmquist, E. *"Factors related to Reading Disabilities in the First Grade of the Elementary School."* Almquist and Wisksell, Stockholm 1960.
18. Phillips, C. J. "Retardation and the Use of Tests." *Educational Review* 1958, 11, 7 - 15.
19. Schonell, F. J. *"Backwardness in the Basic Subjects."* Oliver and Boyd. Edinburgh 1942.
20. A. E. D. Schonfield "Special Difficulties at a Reading Age of 8+." *British Journal of Educational Psychology* 1956, 26, 39-50.
21. Symposium: Contributions to the Diagnosis and Remedial Treatment of Reading Difficulties. *British Journal of Educational Psychology* 1961, 31, 79-105.
    1. Lytton, H. "An Experiment in Selection for Remedial Education." pp. 79-94.
22. Vernon, M. D. *"Backwardness in Reading."*.....*Cambridge* U.P. 1957.
23. Vernon, P. E. "The Psychology of Intelligence and G." *Bulletin of the British Psychological Society*, 1955. No. 26, 1-14.
24. Vernon, P. E. "The Relation of Intelligence to Educational Backwardness." *Educational Review* 1958, 11, 7-15.
25. Woodrow, Herbert "The Ability to Learn." *Psychological Review* 1946, 53, 147-158.

CULTURAL ASSIMILATION BETWEEN INDIANS AND NON-INDIANS IN SOUTHERN ALBERTA

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This paper compares attitudes and values respecting cultural assimilation between Indian and non-Indian high school students in Southern Alberta.

The high school students involved include both Indian and non-Indian students attending the partially integrated high school located in Cardston, Alberta, as well as Indian students attending a number of denominational residential schools on the Blood and Blackfoot reservations in Southern Alberta. A total of 115 Indian students and 335 non-Indian students were sampled in the survey. These total represent the usable returns obtained from a questionnaire which was circulated in the classroom among the high school populations in each of the several school mentioned. In no case was the net response rate below 80 per cent.

Description of the Samples

In terms of basic composition the two populations showed considerable difference in respect to age, sex, class standing in high school, rural-urban residence, and father's educational achievement.

Differences in sex composition were minimal, with males predominating slightly over females in either instance. With respect to age, the Indian population showed a considerably higher average age than did the non-Indian. In terms of class-standing, the Indian population again bulked larger in grades IX and X, with markedly smaller numbers in grades XI and XII, as compared with a much more uniform distribution over the four grades among non-Indian students.

In regard to rural-urban differences in residence, the relative proportion of Indian students residing on farms was approximately twice as large as that among non-Indians. Further, only a small proportion of the Indian students lived in either a town or a city, as compared with more than half of the non-Indian students.

Respecting father's educational achievement there were again marked differences. The Indian population had a much larger proportion of students whose fathers had completed only elementary school or less than did the non-Indian population. Also, more Indian than non-Indian students gave a "don't know" response to the question pertaining to father's educational achievement.

Statement of the Problem

The issue of assimilation between two or more diverse racial or ethnic groups can fruitfully be analyzed by consideration of three major classes of variables: (1) prejudice, or a feeling of status inequality; (2) discrimination, or the refusal to associate freely with members of a different racial or ethnic group; and (3) conflict, or feelings and acts of mutual repulsion which arise out of differences in standards of conduct.[1] Accordingly, in an effort to determine the state of tension existing between Indian and non-Indian school students a series of statements bearing upon attitudes toward the issues of equality, association, and conduct were formulated for presentation to and evaluation by the respondents.

It will be apparent that in dealing with the general issue of cultural assimilation it is possible to approach the issue from the standpoint of implied endorsement of mutual assimilation, i.e., by giving it a positive sanction, or to come at it from the standpoint of implied rejection, i.e., by giving it a negative sanction. In the present survey it was decided to employ both alternatives. Thus, a series of three statements, bearing upon the issues of quality, association, and conduct, were formulated in a positive vein; alternatively, a reciprocal series of three statements bearing upon the same issues were formulated in a negative vein. By proceeding in this manner it became possible to compare the results of the two approaches and to make an assessment as to which of the two discriminates similarities and differences between the two populations most effectively.

The positively formulated statements were: (1) "There is no need for an Indian to feel inferior because most of them are already accepted as equals by Whites!"; (2) "Indians ought to leave the reservation and compete on equal terms with Whites!"; and (3) "Indians ought to stop thinking of themselves as Indians and try to behave like Whites!". In the Table and discussion which follows these statements are identified as statements X_1, X_2, and X_3, respectively.

The negatively formulated statements were: (1) "Most Whites are so prejudiced that no matter how an Indian behaves he is not acceptable an an equal!"; (2) "It is better for an Indian person to stay on his reservation where people know and understand him personally!"; and (3) "Indians ought to take pride in their race and not try to behave like Whites!". In the Table and discussion following this latter set of statements are identified as statements Y_1, Y_2, and Y_3, respectively.

1. Robin M. Williams, Jr., *The Reduction of Inter-Group Tensions,* Bulletin No. 57, Social Science Research Council, 1947, New York, N.Y.

The distribution of responses to the two alternative sets of statements is shown in Table I.

TABLE I

VALUE POSITIONS RESPECTING MUTUAL CULTURAL ASSIMILATION RANKED IN ORDER OF THEIR PREFERENCE

STATEMENT VALUE	POPULATIONS					
	Percentage Affirmative		Percentage Negative		Percentage Undecided	
	Indian N=115 %	Non-Indian N=335 %	Indian N=115 %	Non-Indian N=335 %	Indian N=115 %	Non-Indian N=335 %
Statement X_1	54.7	34.9	23.4	42.6	21.7	22.0
Statement Y_1	56.5	33.4	21.7	58.2	21.7	7.6
Statement X_2	40.0	44.4	38.2	35.5	21.7	19.7
Statement Y_2	24.3	41.7	53.0	38.5	20.8	19.4
Statement X_3	21.7	28.3	60.0	51.0	17.3	20.6
Statement Y_3	80.0	55.8	12.1	29.2	7.8	14.0

The Data

The Equality Issue:—Table I shows that in response to statement X_1, which asserts that Indians are already accepted as equals, more than half of the Indian students gave an affirmative response as compared with only one-third of the non-Indian students. The proportions were 54 per cent and 34 per cent, respectively, and the difference is statistically significant. In response to statement Y_1, which alleges that the Indian is *not* acceptable as an equal no matter how he behaves, the response pattern is almost identical. In the Indian population 56 per cent of the students gave an affirmative response as compared with 33 per cent of the non-Indians. The difference is again statistically significant. It is apparent, therefore, that when allowances are made for slight differences in the phrasing of the two statements, the positive and negative formulations of the equality issue were equally discriminating.

Cross tabulation of the responses to statements X_1 and Y_1 with the background variables bearing upon differences in sex, age, class standing, residence, and father's educational achievement, and age

gave very few significant relationships. In the Indian population differences on the background variables were entirely independent of responses to either of the two statements. In the non-Indian population responses to statement X_1 were likewise entirely independent of differences on the background variables. In response to statement Y_1, however, only differences in sex gave a significant relationship. Boys were significantly more often inclined to agree that no matter how an Indian behaves he is not acceptable as an equal than were girls.

This finding is probably accountable on the basis that boys are generally less idealistic than girls. At the same time it is possible that boys are both more frequently in competition with Indians and are subject to more intense family and social pressures which militate against viewing the Indian as an equal.

The Contact Issue:—The data reported in Table I shows that in response to statement X_2, which asserts that Indians ought to leave the reservation and compete on equal terms with Whites, only 40 per cent of the Indians and 44 per cent of the non-Indian students gave affirmative responses. The difference is not significant. With respect to statement Y_2, however, which suggests that the Indian should stay on the reservation, only 24 per cent of the Indian students as compared with 41 per cent of the non-Indians gave affirmative responses. In this instance the difference is statistically significant.

From this finding it is apparent, therefore, that while the margin of difference between positive and negative formulations of the contact issue was negligible among non-Indian students, Indian students gave a substantially greater number of favorable responses when the issue was phrased positively. In other words, Indian students appear to rebel against the prospect of being confined to the reservation.

Cross tabulation of the responses to statements X_2 and Y_2 with the background variables reflecting differences in sex, class standing, residence, father's educational achievement, and age gave a limited number of significant relationships in both the Indian and non-Indian populations.

In the Indian population responses to statement X_2 were independent of differences in sex, residence, and father's educational achievement. Less advanced and younger students, however, were significantly more frequently inclined to agree with the proposition that Indians ought to leave the reservation than were older and more advanced Indian students. The differences are significant at the .05 and .01 levels of confidence, respectively.

In the non-Indian population responses to this statement were

similarly independent of class standing, residence, father's educational achievement, and age. Non-Indian boys, however, were more often inclined to agree that Indians ought to leave the reservation than were girls. The difference is significant at the .01 level of confidence.

With the exception of class standing in the case of the non-Indian population, responses to statements Y_2 were independent of differences on background variables in both the Indian and the non-Indian populations. Non-Indians who are less advanced, however, were more inclined than their more advanced confreres to endorse the proposition that it is better for an Indian to stay on the reservation.

The Behavioral Issue:—Table I shows also that in response to statement X_3, which asserts that Indians should try to behave like Whites, only 21 per cent of the Indian students and 28 per cent of the non-Indian students gave affirmative responses. The difference is not statistically significant. Alternatively, in responding to statement Y_3, which suggests that Indians should *not* try to behave like Whites, the proportions responding affirmatively were 80 per cent in the Indian population and 55 per cent among non-Indians. In this instance the difference is statistically significant.

It is apparent from these findings that only about one-fourth of the students in either of the two populations agree with the proposition that Indians should try to behave like Whites. Conversely, more than three-fourths of the Indian students and just over one-half of the non-Indian students endorsed the proposition that Indians should not try to behave like Whites. Thus, there is a greater degree of consensus between the two populations when the issue is phrased positively than is the case when the issue is phrased negatively.

Cross tabulation of the responses to statements X_3 and Y_3 were entirely independent of differences on background variables in the Indian population. In the non-Indian population, however, there were a few instances in which a significant relationship did appear. More advanced and older non-Indian students were more frequently inclined to agree with the proposition that Indians ought to try to behave like Whites than the less advanced and younger students. The differences are significant at the .01 and .05 levels of confidence, respectively. Alternatively, younger non-Indian students were more frequently inclined to agree that Indians should not try to behave like Whites than were older non-Indian students.

Discussion

The pattern of responses to the two statements bearing upon equality between Indian and non-Indians suggests that the Indian

population is split into fairly equal halves. One half of the Indian students endorsed the proposition that the Indian is already accepted as an equal, while the other half endorsed the proposition that no matter how the Indian behaves he is not acceptable as an equal. In the non-Indian population it would appear that approximately one-third of the students agree with the proposition that the Indian is already accepted as an equal, another one-third agree that no matter how he behaves the Indian is *not* acceptable as an equal, and the remaining one-third are undecided. Evidently, then, Indian students view their acceptance as equals more optimistically than do their non-Indian peers.

Regarding the contact issue, it is apparent from the findings reported above that substantially less than one-half of the students in either population are in favor of the Indian leaving the reservation and competing on equal terms with Whites. It is noteworthy, however, that while the proportion of non-Indian students who agree that the Indian should stay on the reservation is about the same as that which agrees that the Indian should leave the reservation, among Indian students a significantly greater proportion agree that the Indian *should leave* than agree that he should remain on the reservation.

From the standpoint of progress toward assimilation this finding indicates that a clear majority of students in either population are not in favor of full and unrestricted contact between members of the two respective racial-ethnic communities. That a substantial minority of both populations are in favor of full and unrestricted contact, however, is a measure of change that has already been made in the direction of mutual cultural assimilation.

The finding that less advanced and younger Indian students were significantly more inclined to agree with the proposition that Indians ought to leave the reservation than were older and more advanced Indian students is not readily interpretable. Conceivably, however, less advanced and younger Indian students express a greater optimism about Indians leaving the reservation than their older confreres because they have many more older members of their community to look to as models. At the same time, the changes in transportation and communication, such as the auto and TV, which have been adopted on a large scale by Indians in recent years have probably had the effect of decreasing the attachment of the young to the Indian culture and likely, too, these same developments have served to build up in their minds a more favorable attitude toward the non-Indian culture and society.

Alternatively, the finding that non-Indian boys were more prone to endorse the proposition that Indians leave the reservation than

were non-Indian girls is likewise problematic. Conceivably, however, the non-Indian boys responded to the statement from the perspective of such masculine qualities as initiative and aggressiveness which are more fully emphasized in the non-Indian culture. Similarly, the finding that less advanced non-Indian students were more inclined than their more advanced confrers to endorse the proposition that is is better for an Indian to say on the reservation is again problematic. It is possible, however, that these less advanced members of the non-Indian population may have been projecting their own feelings of strangeness and confusion which they were experiencing in their adjustment to the new and unfamiliar high school situation. The nature of the data, however, are such as to preclude a firm conclusion in this respect.

Respecting the behavioral issue, the finding that the vast majority of students in either of the two populations are in favor of maintaining the status quo so far as Indian and non-Indian behavioral standards are concerned is noteworthy. It is noteworthy also, however, that approximately one-fourth of the students in either of the two populations are in favor of abandonment of Indian standards of behavior by Indians and the adoption by them of non-Indian behavioral standards. In a sense these data constitute a measure of the degree of assimilation which has already taken place and which may be viewed as a sound basis on which to build in the future.

The finding that more advanced and older non-Indian students were more frequently inclined to agree with the proposition that Indians ought to try to behave like Whites than were less advanced and younger non-Indian students is again not readily interpretable. Conceivably, however, the more advanced and older students responded to the question from the perspective of the advantages which the Indian would gain in the community at large if he adopted non-Indian standards of conduct. Younger and less advanced non-Indian students, on the other hand, may have been projecting their resistance to pressures for conformity to the adult world. The data do not, however, permit a firm conclusion respecting this issue.

In summary it is apparent from both the data here reported and that obtained through follow-up interviews with both Indian students and their parents that the rate of Indian assimilation is quickening remarkably. Indian parents of all socio-economic status levels recognize the necessity and desirability of adopting more of the non-Indian ways of behaving, albeit selectively. The Indian youth, however, goes further; not only does he believe that they are distinct advantages to more education and greater acceptance of non-Indian standards of behavior, but he believes also that the time has come for him to cease being an Indian in the traditional sense and simply

be a citizen and a person. While he wants to retain the reservation as a refuge, he also wants to explore the challenge and excitement of the non-Indian world outside the reservation. Like his non-Indian peers, he wants to explore the full limits of his potential as a citizen and as a person. It remains only for public policy, and educational policy in particular, at all levels of government—federal, provincial, and local—to be brought into line with these developments and to overcome the non-Indian cultural lag which appears to characterize the situation at the present time.

HOBBES AND MODERN HUMANISM: THE EDUCATION OF THE PASSIONS

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An Essay on the Role of Reason in Achieving World Government

-:- -:-

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A fundamental concern of thinkers in all ages has been the question of how to promote civilized ways in a precarious social world. Solutions such as the use of natural reason, education, divine grace, or an appeal to natural law or common law have been offered. For Thomas Hobbes, none of these is a practical solution:[1]

> The only technique of order is discipline, discipline imposed from above, discipline that comes from power that cannot be challenged by either passion or ignorance. Sovereignty is . . . the *sine qua non*, not merely of peace, but also of excellence, both for individual men and social groups.

Hobbes was driven by the force of his own logic to such a deduction. His views of the nature of human nature leave no other alternative for stabilizing human relations in society. For him the goal of all striving is power. To get what one wants one must first get power.

Hobbes assumed human beings to be fairly equal in body faculties. Because of this equality of abilities, individuals have similar hopes of gaining similar ends. To get what they want, humans will destroy one another—each is suspicious of the other. In other words, without an over-riding power there is war among men. If not actually fighting, men, in a state of nature would be in a state of cold war.

The life of man would lack ambition because of fear; it would be "solitary, poor, nasty, brutish and short." In the state of nature no justice prevails, there is no right or wrong. Those who are unable to defend property have none. There are no legal standards or ethical standards. There are no property rights. The chief aim of man is to stay alive.

Hobbes held that persons in such a condition would conclude that it is desirable to get out of the state of nature. The desire to stay alive is accompanied by the realization of the necessity to agree

1. S. P. Lamprecht, "Hobbes and Hobbism," *The American Political Science Review*, 34(1940), p. 39.

to lay down the power each has to destroy the other. But each will give up his rights only if all others do.[2]

To get out of the state of nature, however, Hobbes insisted there must be more than mutual promises. There must be a system whereby each person abrogates his rights under a sovereign power which has the authority to punish to the limit any lawbreakers. "The central theme of Hobbes is that the raw material of human nature is such that it can be transformed into a degree of civilized decency through only one political means, namely, through the provision of a genuinely sovereign authority within society."[3]

This analysis of the nature of man, it seems to me, is relevant to the political problem with which world leaders are presently struggling: the need for a world order including world government and world citizenship. Hobbes's political theory, for some, is a realistic attempt to solve the problem of the cold war in which, internationally, the world presently finds itself.

According to Hobbes's theory, states could preserve themselves from international war by surrendering their "rights" to a world government with the requisite power to enforce its laws. They could remove themselves from a "state of nature" where every man is at war with every man.

But Hobbes puts such a sovereign (for our purposes, international government) above the law, and more important, above criticism. S. P. Lamprecht argues that while the ability to appeal to force to maintain civil organization may be necessary, it ought only to be used as a last resort when the appeal to reason has failed.[4]

For Hobbes, man is basically non-rational. Any reason he may display from time to time is because of his fear and vanity. Indeed, man's fear of death brings him from a state of nature into society. We may argue, then, that, in the international context, "calculating selfishness" may bring the nations of the world to accept world government.[5]

Hobbes's all but complete denial of the role of reason in human affairs is not acceptable to modern humanist thinkers who seek to promote civilized ways in a precarious social world. They consider that his break with the medieval tradition concerning men "in community"—*Gemeinschaft*— is a false break. They contend that there are bonds among men other than that produced by calculating

2. "The right of nature . . . is the liberty each man has to use his own power, as he will himself, for the preservation of his own nature—that is to say, of his own life—and consequently of doing anything which, in his own judgment and reason, he shall conceive to be the aptest means thereunto." T. Hobbes, *Leviathan*, Parts I & II (Liberal Arts Press, New York: 1958), p. 109.
3. Lamprecht, *op. cit.*, p. 37.
4. *Ibid.*, p. 50.
5. For a discussion of Hobbes and "rational self-preservation" see G. H. Sabine, *A History of Political Theory* (Holt, Rinehart and Winston, Inc., New York: 1961), pp. 464 ff.

selfishness for the attainment of definite ends. Some argue that the failure of Hobbes to consider man's social nature and his denial of man's reason are the basic flaws in his political theory. Surely man's sociability and his rationality are as important politically as his fear and his selfishness.[6]

Three modern thinkers who accept neither the Hobbesian view of human nature nor his solution of force as the means of political stability are the modern philosophers' knight-errant, the Englishman, Lord Russell, the English left-wing socialist, Harold Laski, and the American reconstructionist philosopher in education, Theodore Brameld. These men, in arguing for world government, place their faith in a reconstruction of human values by means of the process of education.

Writing in 1954, Bertrand Russell said,[7]

> Sometimes in moments of horror, I have been tempted to doubt whether there is any reason to wish that such a creaure as man should continue to exist. It is easy to see men as dark and cruel, as an embodiment of diabolic power, and as a blot upon the fair face of the universe. But this is not the whole truth, and is not the last word in wisdom.

Russell argues that world peace is made less likely by nationalism and fanaticism. To diminish their effects is "essentially an educational task."[8] Intelligence is needed to make the world happy and Russell is optimistic because intelligence is something that can be developed through the process of education.

The ethics of Russell's humanism suggest that it is in man's power by the use of reason and higher faculties generally to better his own condition and to eliminate from his experience elements he finds undesirable. The elimination of evil is a challenge to man. Man has the potential faculties for coping with evil.

Russell defines reason as "the choice of the right means to an end [one] wishes to achieve."[9] Reason does not cause action, it only regulates action. The only possible causes of action are desires, emotions, passions. The role of ethics is to suggest purposes, for man has learned during the long history of his existence that passions are often self-defeating. In the search to satisfy his desires and make more complete his happiness, man looks to the rational control of his passions. Moral codes provide rules of action. Human nature in its individual and social aspects, because of intelligence,

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6. There are writers who tend to agree with Hobbes's analysis:
"But if one wishes to construct a system of social and political behavior which it is hoped all men may find it feasible to adopt, it seems natural to appeal to the sort of far-seeing, rational self-interest on which Hobbes bases his system." See T. Nagel, "Hobbes's Concept of Obligation," *Philosophical Review*, 68(1959), pp. 68-83.
7. *Human Society in Ethics and Politics* (George Allen and Unwin, Ltd., London: 1954), p. 237.
8. *Times Educational Supplement*, "Education for Survival," 2284: 335, 27 February, 1959.
9. Russell, *op. cit.*, p. 8.

can learn moral codes and apply them in the making of humane ethical judgements.[10]

The effectiveness of moral codes and ethics is made possible because individuals act in relation to desired ends. They make possible the distinction, the moral distinction, between purposes which are good and purposes which are bad. They make possible the rational distinction between effective and ineffective means.[11]

In what amounts to a refutation of Hobbes's approach to political and social stability, Russell holds that a wise social system would encourage a process of education and the organization of social systems which would facilitate the acceptance of "compossible" purposes among people of the world, and discourage the acceptance on their part of purposes that conflict.

Similarly, the American philosopher, Theodore Brameld of Boston University suggests:[12]

> Human resources for a happy life on earth are infinitely greater than we have ever dreamed possible—resources that we have hardly begun to tap because we are so blinded by conflict, ignorance and fear.
> . . . [E]ducation could contribute, more than any other agency, to displacing these destructive forces by scientifically ascertainable and testable hopes for the future of mankind.

As a result of a cultural study of education, Brameld contends that education provides the key to world survival and world unity. Culture is man's unique and all-embracing achievement. Brameld defines culture (after Edward B. Taylor) as "that complex whole which includes knowledge, belief, art, morals, law, custom and any other capabilities and habits acquired by a man as a member of society." He argues that because culture is *acquired* by man as a member of society, education, as a tool of culture, is immensely important.[13]

Brameld holds that in the nature of human nature (man's inherent rationality, his inherent sociability) lie the human roots of world order. Realistically he admits the existence of potent arguments against the possible workability of any kind of social institution that attempts to embrace diverse world groups (because men are pugnacious, stubborn, selfish, stupid and sheeplike). But like Russell, and unlike Hobbes, Brameld will not accept such an argument as definitive, for political purposes, of man's nature.

It is the task of education to teach the inherent similarities of the world's peoples. The common things people wish most to do require that they live: a world order is the only means through which

10. *Ibid.*, pp. 8-15.
11. *Ibid.*, pp. 17-18.
12. "Imperatives for a Reconstructed Philosophy of Education," *School and Society* (17 January, 1959), p. 18.
13. T. Brameld, *Education for the Emerging Age* (Harper and Brothers, New York: 1961), pp. 113-114.

economic processes can be controlled on a world scale and which will, in fact, permit people to live; an international authority is the only means by which peace can be ensured to permit the enjoyment by the world's people of the world's goods and services.

According to Brameld, a curriculum based upon the study of human relations would provide for the establishment and maintenance of a world government and world citizenship. He believes modern behavioural sciences, especially anthropology and psychiatry, are increasingly supporting the thesis "that the field of human relations sets a pattern for general education itself—and thus for the organization of secondary and college curricula."[14]

The field of human relations, as made relevant by the modern behavioural sciences, provides a basic and inclusive pattern for the kind of education needed by all young citizens whoever they may be and wherever they may live. In other words, the field of human relations makes possible the kind of education needed in our kind of world.[15] Brameld's curriculum would not be "subject-centred" or "child-centred" but "community centred", and would emphasize that learning which supports world order and occurs through joint study and action.

In Brameld, as in Russell, we see the need, if a world order is to be a reality, for the development through education of a new set of human values. Brameld's reconstructed philosophy of education would express a theory of values built out of the needs, wants and interests of human beings as these are revealed by scientific study of the world's cultures. The new philosophy would "attempt to establish by discussion and consensus the institutional patterns needded now and in the future in order that human beings may achieve utmost fulfillment of those values they posses most universally."[16]

Harold Laski, like Russell and Brameld, believes in the power of knowledge and the need to maximize the communication of knowledge. He insists that Plato was right when he said that "the true test of a state is whether it regards its minister of education as more important than its minister of war."[17]

For Laski, the instrumentality of education must include more than formal education if it is to establish new and acceptable values which will offer security and the hope of happiness. He argues that men, in applying reason to make a just selection of means, must do so in terms of a loyalty to a faith (the substance of ends)—a faith

14. *Ibid.*, p. 136.
15. For a discussion of the meaning of the social sciences for the cultural tasks of our times see C. W. Mills, *The Sociological Imagination* (Oxford University Press, New York: 1959), 234pp.
16. Brameld, *op, cit.*, p. 139.
17. H. J. Laski, *Faith, Reason and Civilization, An Essay in Historical Analysis* (The Viking Press, New York: 1944), p. 36.

for the sake of progress—a faith similar to that which inspired the development of the early Christian Church and the Russian Revolution of 1917. He says, "Our problem is the simple but vital one of finding a new system of values which enables men to live together in peace . . . ."[18] Laski, like Brameld, would base values on utilitarian principles.

The ideal world-wide fraternity cannot be realized, argues Laski, by basing social order on the capitalistic principle of acquisitiveness. Human differences, and not human similarities, as these idealists argue, are stressed by acquisitiveness. World-wide political security will depend upon the acceptance by humans of a *faith* which makes men feel they are "soldiers in the war of human liberation."[19]

In conclusion, what can be said concerning the establishment and maintenance of world government and universal stability? I think the three humanists discussed above would agree, insofar as human nature does manifest selfish, uncooperative behaviour, that Hobbes's solution may be the most reasonable way by which to *establish* world government. Contemporary mankind's increasing fear of annihilation, of radiation hazards, of the population explosion, of the expansion of tyrannous governments, of the danger of subtle means of human and physical exploitation, and all this in spite of man's fabulously increasing knowledgeability on most fronts, may lead, as Hobbes says it will, to international stability through sovereign world government. (Note the development of such precursors of world order as the British Commonwealth, the European Common Market and the notion of the North Atlantic Trading Community.)

But were Hobbes alive today, would he not have to admit, in the light of new knowledge, that the maintenance of world government could and should be secured not by an over-riding authority above the law and beyond criticism, but rather, as Russell, Brameld and Laski hold, by means of a universal process of education which teaches man's "commonness" and which stresses those values common to man? While calculating selfishness may indicate the way out of the international state of nature, surely the goodness which men do possess, if only potentially, indicates the way to *maintain* world order is by way of reason, not coercion.

In other words, human nature is neither as "bad" as Hobbes would have us believe, nor is it as "good" as, say Brameld would have us believe. But human nature is changeable. What we need to

18. *Ibid.*, p. 51.
19. The material well-being of human beings must precede any attempt to educate men for world citizenship. "In all ages when the means of material well-being have been expanding there has been an emergence of that atmosphere of hope which permits men to organize their relationships in terms of persuasion. Hopes act as a factor of unification; it enables men to see what they hold in common and this reduces in the proportion that it is widespread the need for force as the basis of authority." *Ibid.*, p. 170.

recognize is that if human nature is to be commanded, the laws of human nature must be obeyed. In the past we have sought to change human nature without discovering the laws of change. It is dangerous to impose new modes of behaviour on human beings without finding out how men must be educated if a new social pattern is to be established.[20] As these modern humanists suggest, it is especially the new behavioural sciences which are clarifying guidelines that must be heeded if we hope to educate the passions for world unity.

REFERENCES

Brameld, T. *Education for the Emerging Age, Newer Ends and Stronger Means* (Harper and Brothers, New York: 1961).

Brameld, T. "Imperatives for a Reconstructed Philosophy of Education", *School and Society* (17 January, 1959). Pp. 16-18.

Hobbes, T. *Leviathan, Parts One and Two* (Liberal Arts Press Inc., New York: 1958). Pp. xx 298.

Hogben, L. *The Retreat from Reason, Conway Memorial Lecture* (Watts and Company, London: 1936). Pp. xii 83.

Jones, W. T. *Masters of Political Thought,* Vol. 2 (Houghton Mifflin Company, New York: 1947). Pp. 388.

Lamprecht, S. B. "Hobbes and Hobbism", *The American Political Science Review,* Vol. 34 (1940). Pp. 31-53.

Laski, H. J. *Faith, Reason and Civilization, An Essay in Historical Analysis* (The Viking Press, New: 1944). Pp. 187.

London Observer, "Man and the Criminal Generation," 26 November, 1961.

Macpherson, C. B. "Hobbes Today", *The Canadian Journal of Economics and Politiacl Science,* Vol. XI (1945. Pp. 524-34.

Mills, C. W. *The Sociological Imagination* (Oxford University Press, New York: 1959). Pp. 234.

Russell, B. *Authority and the Individual,* The Reith Lecture (George Allen and Unwin Ltd., London: 1955). Pp. 128.

Russell, B. *Human Society in Ethics and Politics* (George Allen and Unwin, Ltd., London: 1954). Pp. 239.

Sabine, G. H. *A History of Political Theory* (Holt, Rinehart and Winston, Inc., New York: 1961). Pp. xii 948.

Stewart, J. B. "Hobbes Among the Critics", *Political Science Quarterly,* Vol. 73 (December, 1958). Pp. 547-65.

Times Educational Supplement, "Education for Survival", 2284 335, 27 February, 1959.

Nagel, T. "Hobbes's Concept of Obligation", *Philosophical Review,* Vol. 68 (January, 1959). Pp. 68-83.

20. For a consideration of the dissillusionment of many thinkers during the last half century with the possibility of "inevitable progress" and of the role of reason in human betterment see L. Hogben, *The Retreat from Reason,* Conway Memorial Lecture (Watts and Company, London: 1936). 83pp.

SELECTING ADMINISTRATORS

JOHN E. DAVIS

One of the most crucial points of decision in the process of selecting educational leaders occurs when a teacher is selected from the great body of teachers for his first administrative position. The study reported here[1] has the purpose of examining the procedures and criteria used for making this decision in certain urban school systems in Canada. The treatment is largely descriptive and comparative, designed to provide a basis for further research and judgment aimed at improving the selection process.

Eighteen large urban school systems in Ontario, Quebec and Nova Scotia were chosen as the subjects of study. These systems were of three types, elementary systems, secondary systems and unified systems, the latter being systems in which the selection policy for administrative personnel of both the secondary and the elementary divisions is administered by one superintendent or director of education.

Two questionnaires were compiled, one of which was sent to the superintendent of each system, while the other, a Principal's Questionnarie, was mailed to three hundred and fifty-one persons appointed to first administrative positions since January 1, 1959.. All of the Superintendent's Questionnaires, and eight-one per cent of the Principal's Questionnaires were returned.

The purpose of the questionnaires was two-fold. They were designed primarily to determine the criteria and procedures used in selection, and secondly to compare the opinions of superintendents and their appointees as to the importance of the various criteria and procedures. At the same time, the information obtained was used in comparing current selection practices with practices recommended by writers and researchers in the field of educational administration. Some of the findings, with comments, are presented below.

Form of Selection Policies.

In only seven of the eighteen systems was the selection policy wholly or partly written, and in only five systems was the written policy available to the staff. Most writers on the subject recommended that selection policies be written and further that teachers and principals as well as administrators from the central office should sit on the committees that draft the policies.

1. J. E. Davis, "Criteria and Procedures Used in Selecting Administrative Personnel in Large Urban School Systems in Eastern Canada". Unpublished Master's Thesis. University of Alberta 1962.

Selection Criteria.

The reports of superintendents and principals showed that the average age of persons appointed to administrative positions in elementary school systems (thirty-five years) was considerably less than that of appointees in secondary (forty-three years) and unified systems (forty years). No relationship is reported in the literature between age and an administrator's rated effectiveness, although the opinion generally expressed is that a school administrator must be old enough to have the maturity, experience and education necessary to do his work and command the respect of his associates.

Only about seven per cent of the respondents were women and none of them had received an appointment in a secondary school system. The superintendents, without exception, stated that they preferred men as administrators except for schools whose top grade was Grade Two or Three. The literature, though suggesting that cultural factors may greatly influence the thinking of superintendents, also states that there is little evidence to show that men are more effective administrators than women.

Teaching experience was shown to be universally a pre-requisite to appointment as an administrator. In elementary systems appointees had an average of thirteen years of experience, while those in secondary and unified systems had ninteen years and sixteen year respectively. In all but four systems, the mean number of years of experience of actual appointees was higher than the top of the range of years of experience stated by the superintendent as being preferred. The literature in the field suggests that some teaching experience may be helpful to an administrator, but finds that the length of teaching experience is not significantly related to his rated effectiveness.

The majority of appointments in elementary and unified systems were made from the ranks of teaching personnel. In secondary systems, appointments were most frequently made from department heads (not defined as administrative positions). Vice-principalships and principalships in that order were the first administrative positions in all types of systems.

All superintendents of secondary systems required their appointees to hold a Bachelor's degree in Arts and Science, as well as having taken a year of professional training in a Teachers College or Faculty of Education. (Holding a degree is a pre-requisite to appointment to a principalship in Ontario). In one system all appointees to vice-principalships were required to take in-service education courses in Administration, Curriculum and Supervision, while principal-appointees were required to have taken these courses at university level. Most superintendents preferred their appointees

to have taken courses in these three fields. All secondary school appointees in Ontario were required by provincial regulation to have taken them during the two required summer sessions leading to the Secondary School Principal's Certificate. Half of the superintendents of elementary systems preferred their appointees to have a degree in Education. The literature supports a four year training programme, as a minimum, and suggests that courses in Administration, Curriculum and Supervision should be part of the training of every school administrator.

Thirteen superintendents indicated that the criterion of scholastic achievement was considered during the selection process, and reported that they usually required candidates to have first or second class standing in their university work. Three superintendents were satisfied if their appointees had earned a university degree, regardless of their standing. A small percentage of the appointees in each type of system reported that they had won awards, scholarships or fellowships at university prior to their appointments. The literature points out that transcripts are difficult to assess accurately because of the differences among institutions in marking, content, and standards.. Some writers in the field suggest, however, that high marks are criteria which should not be ignored.

Superintendents indicated their preference for appointees of better than average intelligence, but set no standards, nor did they try to measure intelligence during the selection process. Some writers suggest that administrators should have an I.Q. of at least 120.

The opinions of superintendents and appointees showed a marked difference about which of a candidate's personal factors were most important in selection. Superintendents rated the ability to get along with people as the most essential personal factor, but also considered leadership, organizing and executive ability, good judgment and common sense as being highly important. On the other hand, appointees believed that they owed their appointments to their ability to teach, their breadth of knowledge, their ability to get along with people, and their initiative and willingness to work, in that order.

The criterion of good health does not seem to be a factor of major importance in selection since few systems required their appointees to undergo a physical examination, although three systems did request this of candidates from outside their system. The literature suggest that a physical examination is in order, especially for candidates from outside the system, since good health is a necessary attribute of successful administrators.

Although seventy-five per cent of the superintendents indicated that they preferred candidates to have a knowledge of either educa-

tional theory and practice, or of a subject matter field, no attempt was reported to measure this knowledge during the selection process. The literature suggests many suitable tests which might be used, but does not suggest standards to be applied.

When superintendents were asked which criteria they considered to be most important in selection, they reported that a candidate's personal factors and his experience were most significant. Appointees indicated that they believed their experience, training, and breadth of knowledge carried the most weight. It would seem that in large urban school systems where many candidates might otherwise be considered equally qualified, experience is, in fact, an important selection criterion. The literature tends to discount the need for an extended period of teaching experience, noting that it often means the same experience repeated many times, rather than many years of wide, varied experience. Only two systems of those surveyed reported specific attempts to provide this latter type of experience.

Selection Procedures.

It was found that within a system, candidates are most often identified by personal contact with the superintendent or other administrative personnel, or by application from the candidate. Applications from outside the system are most frequently solicited by newspaper advertising. All the systems surveyed identify candidates before they are needed, and fifteen usually keep a list of candidates on hand from year to year.

The data from the Superintendents' Questionnaires showed that in fifteen of the eighteen systems a committee is used to determine the qualifications desired of administrative appointees. Members of the committee are most frequently the superintendent and his assistants, and often school board trustees and members of the supervisory staff. The qualifications established are applicable to administrative positions on a system wide basis in fourteen systems, and on an individual school basis in three systems, while a combination of methods is used in seven of the systems. The literature supports the use of a committee to determine qualifications but suggests that principals and teachers should serve on it as well as top administrative personnel. It also recommends the practice of establishing qualifications for individual schools, rather than solely for the system generally.

In making the actual selection decision the most common agent is the superintendent and a committee whose choices are then formally ratified by the school board. In three systems, however, the committee makes several recommendations and the school board

makes the final selection from among them. The literature recommends that the superintendent make the final selection, or, if he has authority only to recommend, that the board accept the recommendation in all but the most unusual circumstances.

Only one system reported the use of any kind of internship plan. In that system, candidates attended twenty in-service leadership training meetings per year over a two year period. Other superintendents and appointees noted that they considered the position of department head to be a type of internship for vice-principalship. Many systems considered that although the vice-principalship is a first administrative position, it is also a type of internship programme for the principalship. The literature strongly supports internship plans, considering them to be highly contributive in the preparation of principals.

Conclusions.

The main conclusions reached as a result of the study were that selection policies in many systems are ill-defined and exist only in the minds of those responsible for selection. Most superintendents rely upon the use of such devices as interviews, observations and applications to help them decide whether candidates are suitable for appointment. The literature on the other hand, recommends the use of rating scales, tests, and internship programmes.

It was also concluded that superintendents and their appointees disagree as to which factors are most important in actual selection. Superintendents report attaching greatest significance to factors that are commonly associated with an administrator's task, such as the ability to get along with people, and leadership. Appointees commonly believe that the most important factors in their own selection were factors associated with teaching, such as their ability to teach, their breadth of knowledge, and their training. Experinece is recognized by both groups as an extremely important factor.

A further conclusion was that several differences of practice exist between superintendents of elementary school systems and superintendents of secondary school systems regarding selection policies. The former tend to consider younger persons, and those with less experience. They will also appoint women. Many of them require their appointees to have a degree in education rather than in a subject field. On the other hand, superintendents of secondary school systems require initially higher academic qualifications of all of their appointees. More of them reported that they would consider applications from outside of their system than did elementary school superintendents.

One major recommendation was made, from which several other

minor suggestions followed. This was that all school boards commit their selection policies to writing and make them available to their teaching personnel and to any other persons who apply for administrative positions. As part of this major recommendation, it was suggested that a committee be formed to draw up a selection policy. Membership on this committee would include principals and teachers as well as leading administrative personnel of the system. It is felt that written selection policies, conscientiously followed, would improve morale in the teaching staff, and give guidance to teachers wishing to become administrators and to institutions which prepare administrators.

REFERENCES

Department of Elementary School Principals. *The Elementary School Pricipalship—A Research Study.* Thirty-seventh Yearbook, Washington: National Education Association, 1958.

Forester, J. J. "Selecting and Training Elementary School Principals", *National Elementary Principal,* 34: 32-35, October, 1958.

Greene, J. E. "How Do Large Cities Select Principals?" *National Elementary Principal,* 34: 33-36, May 1955.

Hadley, W. M. "The Selection of School Principals," *American School Board Journal,* 125: 25-26, July 1952.

McIntyre, K. E. *Recruiting and Selecting Leaders for Education.* Austin, Texas: Southwest School Administration Centre, 1956.

Schutz, W. C., et al. *Procedures for Identifying Persons with Potential for Public School Administrative Positions.* (Mimeographed) Berkley, California, 1961.

Tope, D. E. (ed.) *A Forward Look, The Preparation of School Administrators* 1970. Bureau of Educational Research, University of Oregon, 1960.

Unruh, A. "Internship", *Nations Schools,* 59: 63-64. May 1957.

EXAMINING THE EFFICIENCY OF PREDICTORS PRESENTLY BEING USED AT THE UNIVERSITY OF ALBERTA

LAURENCE L. MACK

Review

Universities throughout Canada and the United States have been using entrance aptitude examinations for many years. The practice has become so established that many universities fail to question their usefulness. The schools which do survey the effectiveness of their entrance examinations have reported conflicting findings. A survey by Berdie, Dressel and Kelso (Buros, 1959) shows ACE predicted correlations varying from .25 to .66. Within a given subject area, correlations between .02 and .44 have been reported. Mitchell (Buros, 1959) states that the median reported correlation is about .54 for schools using the ACE in their predictive studies. Such lack of consistency makes it imperative for each university to examine it's individual entrance examinations and screening processes.

The University of Alberta has had it's program examined on different occasions (Evenson and Smith, 1957-58, Black, 1959-60). Evenson and Smith report that the correlation between high school Grade XII average and first year is .48 as compared with a .37 for the American Council on Education, Psychological Examination for College Freshmen (ACE). When they examined the correlation for individual faculties they found wide faculty differences. The Faculty of Arts and Science reported correlations of .58 and .34 for the respective predictors. The Faculty of Engineering had correlations of .59 and .26 which suggests that the ACE was not a very effective predictor of success in either faculty when the amount of predictable variance is considered. The restrictive range of the population is no doubt of some importance in the establishment of these low correlations. Black, using different statistical methods, found a different set of correlations and his study will be reviewed later.

Having such marked variation within one university, it is not difficult to understand the wide range of results reported in Table I. This table represents work done in fourteen different universities and their various methods of predicting first year success.

TABLE I

PREDICTORS AND THEIR R's WITH THE FIRST YEAR'S AVERAGE

Investigators	High School	ACE L	ACE Q	ACE T	Co-op English	SCAT	Multiple R's	Types of Students
Aloia	.....	.....	.....	.....	.49	.....	.....	.....
Carter	.....	.....	.....	.53	.....	.....	.....	.....
Carter	.....	.....	.....	.50	.....	.....	.....	.....
Chahbaze	.37	.....	.....	.....	.30	.....	.38	Cornell—School of Agriculture
Chappell	.....	.40	.46	.34	.40	.....	.52	Agriculture, Arts and Science, Education, Engineering
Evenson	.48	.....	.....	.36	.....	.....	.....	University of Alberta
Grater	.....	.42	.68	.58	.....	.....	.53	Women—Liberal Arts
Grater	.....	.28	.23	.32	.....	.....	.....	Men—Liberal Arts
Henderson, H.	.53	.....	.....	.26	.38	.....	.56	Hofstra College
Henderson, N.	.....	.....	.....	.58	.....	.....	.....	.....
Jenson	.....	.42	.....	.43	.52	.....	.57	Brigham Young
Juola	.....	.49	.37	.50	.....	.....	.....	Michigan State University
Klugh	.65	.....	.....	.....	.....	.51	.68	Women—Alma College
Klugh	.58	.....	.....	.....	.....	.54	.67	Men—Alma College
Mann	.70	.67	.62	.....	.....	.....	.83	200 girls—Seton Hill
Spaulding	.46	.....	.....	.....	.....	.42	.57	Women—Colby Junior College
Weeks	.44	.02	.28	.19	.....	.42	.58	Teacher College

There have been several evaluations and comments on the effectiveness and usefulness of the ACE (Buros, 1959, 1953; Cronbach, 1960). Their criticisms will now be summarized.

1. The latest revision was in 1950, and there have been no additions since 1954.
2. The "L" and "Q" scores have high inter-correlations making the total score a measurement of the same criterion and thus the only meaningful score.
3. Normative data are extremely weak.
4. There is an absence of reported critical statistics such as reliability and validity estimates.
5. The score interpretations are extremely limited.
6. There is a deficiency in the basic characteristics needed for a college aptitude test. The length of administration is too long and the test does not discriminate at the upper levels.
7. There was no attempt to provide data or instructions which might help users to construct local norms.
8. It is predominantly a speed test. This leads to an easy to hard test which in turn means that the discrimination at the higher level will not materialize.

From the above mentioned criticisms, it is not difficult to understand why the number of universities and colleges using this test has dropped from a high of 293 in 1947 to 186 in 1954. There is no estimate of the number of schools using the test. It is assumed that the number is still decreasing.

The University of Alberta uses the Co-op English Test as its second instrument for predicting success of the first year student. By and large the reviews of this instrument have not been so critical. The correlation between it and the first year averages lie between .30 (Chahbaze) to .78 (Buros, 1959). There is reported in the manual a reliability coefficeint of .82. Furthermore it has been suggested that the English Test scores are a better predictor of written work than are course grades. There is no numerical verification of this. There have been two types of criticism of the Co-op English Test. One is that a reading test has about the same relationship to school achievement as do group intelligence tests. The correlation between these two types of tests ranges between .7 and .8 (Webb, Buros, 1959). Perhaps the strongest criticism of this test is that English tests do not yield direct evidence of ability to use English effectively in speech and writing. They are in fact, measures of such skills as proof-reading, error location, and criticism of written material.

In recent years the movement has been towards multiple correlation predictions. Such programs attempt to get better combinations of predictors with more specific criteria of success. As will be seen in Black's study and others, the use of individual high school courses as predictors plus individual entrance examination results and finally subscores of these examinations as predictors of individual university courses as well as overall averages may prove to be the most effective predictors. The multiple correlations are to be found in Table I. Due to the closeness of results between the various studies, no attempt will be made to list the individual tests used in the different studies.

Perhaps the latest approach to predicting university success is that developed by Horst (1954-59), a system for selecting the best correlations of "n" predictors. Basically this method is to use a number of different criteria as has been outlined above. Black's (1960) work at the University of Alberta gives an excellent example of this approach. His first task was to determine those predictor variables that would be most economical for predicting freshmen success. In order to do this, he used the six or seven twelfth grade courses' results and matched them with various courses at the university level. The next step was to arrange tables to present the zero order correlation coefficients between various predictors and criterion variables. Finally he presented a table of multiple correlation coefficients resulting from the use of various predictor variables to predict scores in the freshman criterion. On the whole, his results were very encouraging. In an informal conversation, however, it was learned that his work has not been utilized. What was hoped was that the high school counsellor would use the ready-made table to predict success for individual students. The reason for this lack of use is not definitely known. It may be that the method is too cumbersome or confusing to the average counsellor.

There have been other studies based upon Horst's method. An example of this is K. Eelis (1961) He used the new method as well as the older one to find correlations and predictive values for various faculties. He then examined the results of the two methods, in order to see exactly how much the new method increased his predictability. For his purposes, he used three large faculties rather than individual courses, Arts, Engineering, and Commerce. He too found an increase in predictive power in all faculties by the use of Horst's method. The multiple correlations for the respective faculties were .61, .47, and .55. However, the increase over use of a single test battery was only .03, .05, and .02. He concluded that this additional effort did not seem to be warranted. To add to Eelis' argument, a review of Horst's work at the University of Washing-

TABLE II
CORRELATIONS WITH THE FIRST YEAR AVERAGE*

Grade XII Groups	High School Average	ACE Q Scores	ACE L Scores	ACE T Scores	Co-op A Scores	Co-op C_2 Scores	Correlations of .450 or better
FACULTY OF ARTS							
60-64	—.296	.346	.163	.296	.166	.167	1. 75-up Co-op A = .810
65-69	.288	—.001	.087	.072	.214	.257	
70-74	.222	—.304	—.125	—.253	—.184	—.040	2. 75-up Co-op C_2 = .533
75-up	.281	.135	.065	.125	.810	.533	
Total Group	.508	.155	.253	.260	.379	.321	3. Total High School Average = .508
FACULTY OF SCIENCE							
60-64	.033	—.151	—.197	—.202	.150	—.075	1. Total High School Average = .715
65-69	.293	.251	.138	.198	—.032	.145	
70-74	.346	—.086	—.150	—.152	—.183	—.029	2. 75-up High School Average = .512
75-up	.521	.247	.129	.200	—.059	.039	
Total Group	.715	.297	.282	.325	.384	.298	
FACULTY OF EDUCATION							
60-64	.224	.076	.052	.077	.070	.074	
65-69	.137	—.122	—.048	—.088	.098	.055	
70-74	.235	.024	.061	.057	.049	.168	1. Total High School Average = .450
75-up	.296	.076	.149	.134	.047	.061	
Total Group	.450	.084	.195	.174	.193	.219	

TABLE II—CORRELATIONS WITH THE FIRST YEAR AVERAGE—*Continued*

FACULTY OF ENGINEERING							
60-64	.204	.334	.375	.428	.166	.194	
65-69	.244	.174	.039	.111	—.120	.117	
70-74	.169	.293	.253	.296	.099	.409	1. Total High School Average = .549
75-up	.258	.001	—.026	—.021	—.075	.069	
Total Group	.549	.234	.243	.272	.151	.280	
ALL OTHER FACULTIES							
60-64	.305	—.054	.107	.049	.252	.131	1. Total High School Average = .647
65-69	.056	.056	.170	.147	.117	.371	
70-74	.351	.252	.326	.411	.310	.358	2. 75-up High School Average = .559
75-up	.559	.241	.261	.298	.309	.001	
Total Group	.647	.130	.389	.354	.446	.390	3. Total Co-op A Scores = .446

*The correlations given are based upon the total year student population of the class 1960-61.

ton was made. Of the forty-seven courses Horst was trying to predict from high school course work, only six could be predicted at a higher level if he had used the total high school average. The increase for these courses was only .05. Three additional courses had a superiority of .10. An interesting fact was noted, however: for college biology, the best predictor of success was social science (.53) and not science grades (.22).

A More Efficient Predictor

Problem

This study, though not exhaustive, gives a reasonable sample of the work done in university studies. The sampling in turn would justify the program of correlating a large number of different standard tests as well as high school averages with first year grade averages in order to examine their usefulness as predictors. This would enable the University of Alberta to compare it's entrance testing program with those of other schools. If the resulting standard tests' scores do not, on the whole, have markedly different correlations than those reported in other studies, then the use of the high school average should be again the best single predictor. These results would add weight to the use of the multiple correlation work. As has been mentioned, the study done by Black, although good, has not proven to be effective for the high school counsellor. It is felt that an easier and yet justifiable method would be to develop a table providing the probability of a given student with a given average receiving a given average within the various faculties. This table would be based on one variable, namely the high school average.

Method

Using a combination of Horst's work and Eelis' work as a guide, the high school averages were grouped into five point intervals, starting at the average of 60 and then progressing by five point intervals to 75 and from there on into one group. It was believed that by such a method higher relations could be found for smaller grade grouping. This makes four groups in all. First year's averages for persons in these four groups were then found within five faculty groupings. The university was divided into five faculties, namely, Arts, Education (without Junior E's), Engineering, Science and All Other Faculties. The correlations listed in Table II were found for these subgroups for the 1960-61 freshmen at the University of Alberta. Correlations given are the L, Q, and Total scores of the ACE, the Co-op English A and C_2, and the high school average for each group of high school averages in each faculty grouping. The high school average for the total number of students within a given faculty is also listed.

Results and Discussion

Reviewing Tables I and II plus evidence already cited in this paper, it is clear that the best single predictor for university first year success is the high school average. It is especially true at the University of Alberta where the entering group has taken a standard Grade XII achievement test in six or seven subjects. This, in effect, give us a uniform entering requirement. The above correlation between first year's university average and the high school averages are reasonably good when it is realized, as Traxler (1943) reports, that teachers' marking (and university professors') seldom exceeds a .65 in reliability. This means that if a professor were as consistent in his marks as the high school averages, chances are the correlations would be even higher.

From Table II it is clear that the correlation based upon the total group average within one faculty is far superior to a correlation based upon groups divided into five point intervals. Knowing the relationship between grade twelve average and first year university average, it would now seem justifiable to construct a simple expectancy table. That is, how many students *did* fail in a given faculty with a given high school average? The number of cases was counted for each subgrouping.

Table III, as will be noted, has the same form as Table II. It is arranged by the high school averages and the university averages within the given faculties. The seven groups, in their faculties, were derived by the same method as the high school group except that the starting point was 50 and the additional group was made for those falling below a 50 average. The number in the respective positions represent the number of students out of 100 receiving that score. An example of how to use the table: out of 100 high school seniors with an average matriculation of 67, in the Faculty of Arts, chances are that 15% will fail, but only two per cent will receive a 70 average or better. Using such a method, it is believed that the high school counselor or the university counselor may predict the chances of a student receiving a given average in the respective faculties. Perhaps the safest way of using Table III would be to use total students, for this is the same group as total group average found in Table II. By using this group, one can say that so many out of one-hundred students failed, and chances are the lower the high school average the greater the chance of failure. In fact it is the pupils whose high school averages are below 64 who make up over half of the failure in a given faculty.

These are estimates of "true" probabilities and thus are subject to some error. Constant addition and accumulation of information would be required if the probability table is to become more precise.

TABLE III
EXPECTANCY TABLE*

The following are the percentages of students which fall within the respective subgroups of university grades.

High School Average	UNIVERSITY GRADES Below 50	50-54	55-59	60-64	65-69	70-74	Above 75	Above 80
FACULTY OF ARTS	%	%	%	%	%	%	%	
60-64	30	23	26	15	4	2	0	
65-69	15	25	33	20	5	2	0	
70-74	8	2	18	34	26	8	2	
75 and above	2	2	4	13	30	26	23	
Total Students	14	13	20	20	16	9	6	
FACULTY OF SCIENCE								
60-64	38	14	23	17	7	1	0	
65-69	20	15	15	25	13	12	0	
70-74	0	5	12	25	18	22	18	
75 and above	0	1	8	6	30	20	15	20
Total Students	15	9	15	17	17	13	14	
FACULTY OF EDUCATION								
60-64	18	16	40	18	4	3	0	
65-69	10	13	23	30	18	5	1	
70-74	3	8	21	18	24	25	1	
75 and above	2	4	5	12	20	35	22	
Total Students	10	12	28	20	14	13	3	
FACULTY OF ENGINEERING								
60-64	34	14	26	16	6	4	0	
65-69	10	17	7	17	15	32	2	
70-74	4	2	11	15	29	25	14	
75 and above	4	4	8	10	12	23	14	25
Total Students	13	10	13	15	15	20	14	
ALL OTHER FACULTIES								
60-64	17	18	31	21	10	3	0	
65-69	5	14	23	32	21	4	0	
70-74	0	0	5	33	35	25	2	
75 and above	0	0	5	10	18	24	31	12
Total Students	9	11	21	23	18	10	8	

*The percentages given are based upon the total first year student population of the class 1960-61.

This type of accumulation could have been started after the work of Evenson and Smith. Their study pointed out the importance of the high school average as related to predicting university success. Perhaps this study could give some impetus for the high school counselor to begin such accumulation.

Summary

The purpose of this paper was twofold. One was to review the effectiveness of the testing program at the University of Alberta and the second was to add a simpler but effective means of predicting success at this university.

A survey of the recent predictive studies using the ACE, the A and C_2 portions of the Co-operative English battery, and the high school average was made. This was done in order to establish the usefulness of these predictors with the first year university averages. The individual predictors have not proven to have a very high correlation with the exception of the high school average. The University of Alberta testing program results prove to be similar to those of other schools. The best single predictor throughout was the high school average. When multiple correlations were used these proved to be of great benefit when they were constructed from several small variables, i.e. individual courses, sub-test scores, and university courses. Finally, these investigations of the multiple correlations have not proven to be too useful because of their complexity in interpretation and prediction for the average counselor.

Using these findings but still wishing to have an effective tool for counselling predictive purposes, a table showing the probability of a student receiving an average in a given range in a faculty was constructed. The table was constructed by using the actual number of cases found within the various ranges and the various university faculties.

REFERENCES

1. Buros, Oscar K. *The 4th Mental Measurements Yearbook.* The Gryphon press, Highland Park, N. J.
2. Chahbaze, Parviz. The Prediction of Achievement in a College of Agriculture. *Educ. & Psychol, Measmt,* 1955, *15,* 484-486.
3. Chappell, Tolan L., Collis, Robert, Renjaglia, Guy and Spohrer, Myron A. The Differential Prediction of Achievement at the University of Missouri. *Educ. & Psychol, Measmt.,* 1954 *14,* 724-725. (PA 29:7955), P.S. (PA 29: 2982), P.S.S. (PA 29:7954).
4. Cronbach, Lee J. *Essentials of Psychological Testing.* 2nd Edition, New York: Harper & Brothers.
5. Demos, G. D. & Spolyar, L. J. Academic Achievement of College Freshmen in Relation to the Edwards Personal Preference Schedule. *Educ. & Psychol. Measmt.,* 1961, *2,* 473-479.

6. Eelis, K. How Effective is Differential Prediction in Three Types of College Curricula? *Educ. and Psychol. Measmt.*, 1961, *2*, 154-158.
7. Eelis, K. Vivid Method of Presenting Chances for Academic Success. *J. Counsel. Psychol.*, 1961, *4*, 67-83.
8. Evenson, A. B., & Smith, D. E. A Study of Matriculation in Alberta. *Alberta J. Educ. Res.*, 1958, *4*, 67-83.
9. Ghereli, E. E. Prediction of Predictability. *Educ. & Psychol. Measmt.*, 1960, *1*, 3-8.
10. Goodstein, L. D., and others. Use of CPI in a University Counselling Servce. *J. Counsel. Psychol.*, 1961, *2*, 147-153.
11. Gowan, J. C. Intercorrelations of the American Council Psychol-Examination with other types of Tests. *J. Educ. Res.*, 1960, *54*, 157-159.
12. Gralir, Harry & Thalman, W.A. A Statistical Anaylsis of the Relationship Between ACE and Grade-Point Averages. *J. Educ. Res.*, 1955, *49*, 307-310.
13. Henderson, Harold L. Predictors of Freshman Grades in a Long Island College. *Educ. and Psychol. Measmt.*, 1957, *17*, 623-627.
14. Horst, P. A. A Technique for the Development of a Differential Predictor Battery. *Psychol, Monographs*, 1954, *9*, LXVIII.
15. Horst, P. A. *Relationship Between Preadmission Variables & Success in College.* Seattle, Washington: University of Washington, Division of Counselling and Testing Service, 1959.
16. Jensen, Vern H. & Clark, Monroe H. A Prediction Study of Co-operative English Test Scores. *Pers. & Guid. P.*, 1958, *36*, 635-636.
17. Juola, H. E. Predictive Validity of Five College-level Academic Aptitude Tests at One Institution. *Pers. & Guid. J.*, 1960, *38*, 637-641.
18. Klugh, H. E. & Berley, R. School and College Ability Tests and High School Grades as Predictors of College Achievement. *Educ. Psychol. Measmt.*, 1959, *19*, 625-626.
19. Mann, M. J. Prediction of Achievement in a Liberal Arts College. *Educ. & Psychol. Measmt.*, 1961, *21*, 481-483.
20. Spaulding, H. Prediction of First Year Grade Average in a Private Junior College. *Educ. & Psychol. Measmt.*, 1959, *19*, 627-629.
21. Traxler, Arthur E. Some Comments on the Prediction of Differential Achievement in Technological College. *J. Appl. Psychol.*, 1943, *27*, 176-179.
22. Weeks, J. C. Predictive Validity of ACE and SCAT. *Pers. & Guide. J.*, 1959, *38*, 51-54.

A REPORT ON AN APPLIED LINGUISTICS METHOD USED TO IMPROVE THE SPOKEN FRENCH OF FRENCH-SPEAKING STUDENTS AT THE GRADE SEVEN LEVEL

SISTER SIMON-HERMANN, a.s.v.

I. The Problem and Purpose of the Study

For a number of years, the Alberta bilingual teachers have been deeply concerned over the deficient language, both written and spoken, of Franco-Albertan youth. After much thought and discussion, the A.E.B.A. (Association des Educateurs Bilingues de l'Alberta) considered, in 1960, as the most suitable means to remedy the situation, a lightening of the existing programme of French in the bilingual schools. It was expected that greater emphasis in the teaching of the so-called basic subjects (grammar, dictation, composition) would enable the present generation of French-speaking students to achieve a greater mastery of their mother tongue.

Since the review of the literature in the field reveals as increasing interest in the applied linguistics method of teaching languages, it was hoped that a solution to this problem could be found in this relatively new approach. The study[24] was an attempt to secure evidence concerning the usefulness of the new method. It consisted of a linguistic experiment devised to improve the spoken French of French-speaking students at the grade seven level in three Edmonton bilingual schools.

In order to evaluate this experiment, two sets of comparable tests were administered, one prior to its launching and the other at its conclusion. The pretests provided some accurate information regarding the language skills of the pupils; the posttests revealed some worthwhile improvement, attributable to the three-month linguistic experiment.

II. Definition of Terms

The *Applied Linguistics Method* is one which makes abundant use of oral practice and emphasizes the learning of complete structural patterns. It attempts to promote fluency in the language, learned or corrected, through exercises for oral drill.

Linguistics has been defined by R. L. Politzer as "the scientific study of languages."[10] Considering language as "behavior", linguists try to induce students *to behave,* i.e., to perform in the language they are learning. Linguistic analysis sheds light on units of behavior to be taught. These are the structural speech patterns which the students must learn perfectly.

Speech patterns are simple basic language elements, which can be used to build more complicated thought patterns. In the light of modern thinking in language teaching, language is learned by mastering sentences, phrases, word combinations rather than by extensive study of grammatical rules. The mastery and ready recall of these speech elements provides the pupils with a pattern for the expression of any idea they are likely to need in normal speech.

III. Need for the Study

The problem of the spoken language has always been present in the minds of educators. Grammar, so long defined as "the art of speaking and writing correctly," has been the traditional approach used by teachers in their efforts to better the speech habits of their pupils. Yet, grammar alone does not appear to be the most effective means of improving the spoken language of French-speaking pupils.

In Alberta the problem is acute because French-speaking students live in an environment in which English is the dominant language. At school they study the English language more than 80 per cent of the school day. The atmosphere of the home is not always favorable to the development of good speech habits in French for the following reasons:

i. French language in the home is too often grammatically and phonetically incorrect.
ii. English is the medium used in nearly all radio and TV programming.
iii. Very little French reading material, e.g., books, newpapers, magazines, is found in homes and public libraries.

It is therefore important that some action be taken to help the pupils speak their mother tongue as correctly as possible.

On the other hand, as evidenced by a film produced in Calgary, under the leadership of Mr. L. A. Robertson, supervisor of the TV Oral French Programs (which during the years 61-62, 62-63 have been sponsored by the Calgary Public and Separate School Boards), French is taught quite successfully to the grade 4 non-French pupils. Likewise, it is suspected that a special programme, employing the same modern methods and electronic audio-visual aids (television, tape-recorders, filmstrips), would produce worthwhile results in terms of correct speech habits among students who already understand the French language but speak it incorrectly.

IV. The Experimental Design

The linguistic experiment in the present study was carried out with three Edmonton grade seven classes: that of the Sacred Heart School on 96th Street, that of St. Luke on 159th Street, and that of the Académie Assomption, a private school for French-speaking

girls on 97th Street. The first two groups belong to a similar social environment, the difference being in favor of the Sacred Heart group, which has a longer tradition of French spoken in the homes and taught in the school. The Académie Assomption group is the most advanced of the three; the pupils come from homes where better speech patterns are used generally. Furthermore, the Académie gives intensive training in the French language; it organizes the students' activities towards an almost continuous use of French; a good library, at the disposal of the girls, is an important adjunct in the French instruction given to the pupils.

Two teachers are responsible for the teaching of *Mon Livre de Conversation française,* one to the Sacred Heart group and the other to the Académie Assomption. The present writer has similar responsibilities with the St. Luke group.

The *main instrument* used with the three experimental groups was *Mon Livre de Conversation française.* Especially prepared for this experiment it incorporates some principles that pertain to Applied Linguistics and also reflect recent thinking in language-teaching methods:

i. Proper control of oral language is obtained through frequent repetition of speech patterns which are functional, i.e., likely to be used in the normal course of daily life.
ii. Grammar is also functional, i.e., treated occasionally with reference to speech patterns being used.
iii. The students have the opportunity to use basic speech patterns in general speaking conditions. Each lesson, therefore, offers in the varied exercises it contains the opportunity for spontaneous dialogue or short speech, thus expanding the oral experience over a wide range of subjects.
iv. To fit the book more realistically to the limited time given daily to the experiment, the exercises are short, making allowances for more intensive oral drills and greater opportunity for spontaneous short speeches.

The pretests and the posttests were administered to measure the efficiency of the teaching method applied to *Mon Livre de Conversation française.* These were:

"Cooperative French Comprehension Test, Forms A and B"
"Cooperative French Test, Elementary Forms Q and R"
Tape-recorded Tests of Oral Conversation.

The "Cooperative French Listening Comprehension Tests, Form A and B" measure the ability of the students to understand spoken French; only the general directions for taking the tests are given in English; the suggested responses, as well as the tape-recorded material, are in French. Four types of listening situations have been included in each form, A and B:

i. Phonetic discrimination
ii. Answering questions

iii. Completion of statements
iv. Comprehension of passages

The "Cooperative French Tests, Elementary Forms Q and R" consits of three parts:

i. Reading comprehension of French sentences
ii. Vocabulary
iii. Functional French grammar

The Tape-Recorded Tests of Oral Conversation aimed at finding the quality of the phonetic sounds, of the vocabulary and of the sentence structures used by each student when speaking spontaneously on subjects within the range of his experience.

The following histograms show a comparison in the results obtained in the pretests and the posttests. The upper sections indicate the gains achieved; except for section III Grammar, for the Académie and the St. Luke groups which registered lower scores in the posttest, all other sections of the three posttests reveal some improvement made. This loss in section III Grammar may be an indication of the necessity of including a certain amount of grammar teaching in a language program. Contemportry linguists are in agreement as to the need of functional grammar which is a valuable aid to comprehending the structure and mechanism of the language already in use.

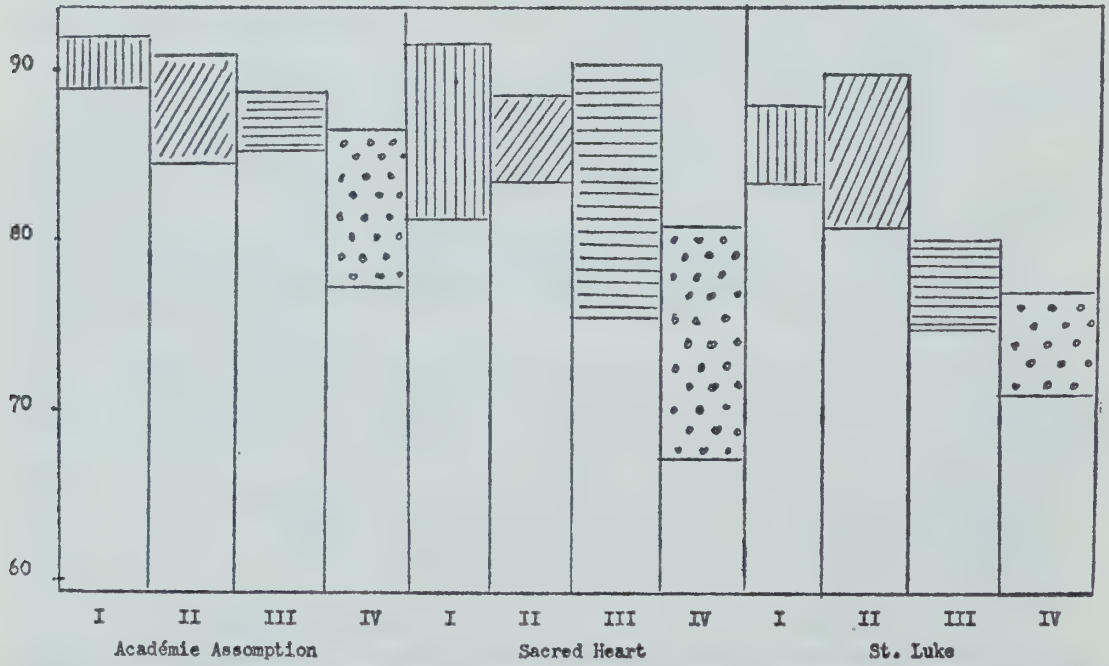

Figure 1.—Histogram showing a comparison of the percentages obtained by the three groups in the four parts of the Listening Test.
The upper sections indicate the gains achieved, as revealed in the Listening posttest.
I Phonetic discrimination
II Answering questions
III Completion of statements
IV Comprehension of passages

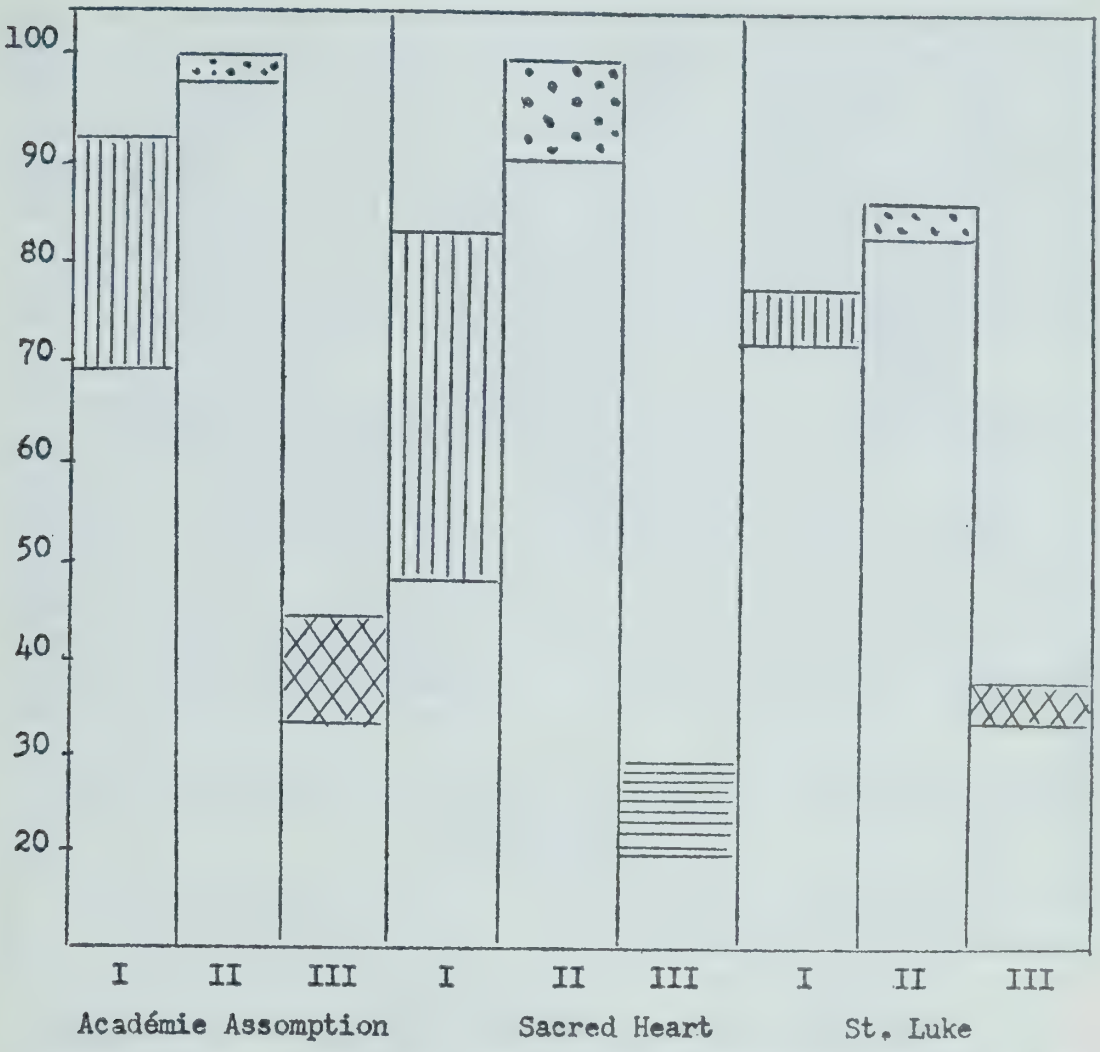

Figure 2.—Histogram showing a comparison of percentages obtained in the parts of the Reading Test: Part I Reading, Part II Vocabulary, Part III Grammar. The upper sections indicate gains achieved in the language skills. Except for Section III Grammar, for the Académie and St. Luke groups which registered lower scores, all other sections revealed some improvement made.

In summarizing the findings made in the Oral Conversation posttests, the writer noted that the highest scores obtained by the pupils were in Part II Sentence Structure. A similar observation had been made in the pretest. It was then suggested that the earlier training in written French received from grades 1 to 7 could provide a plausible explanation for such an unexpected phenomenon. In fact, the main difficulty experienced by French-speaking pupils in their ordinary conversation lies in their inability to utter correct sentences; it was to help a group of grade seven students overcome this basic speech difficulty that the present linguistic experiment was carried out. However, a careful review of the recordings of both pretest and posttest was made. The improvement shown by all candidates

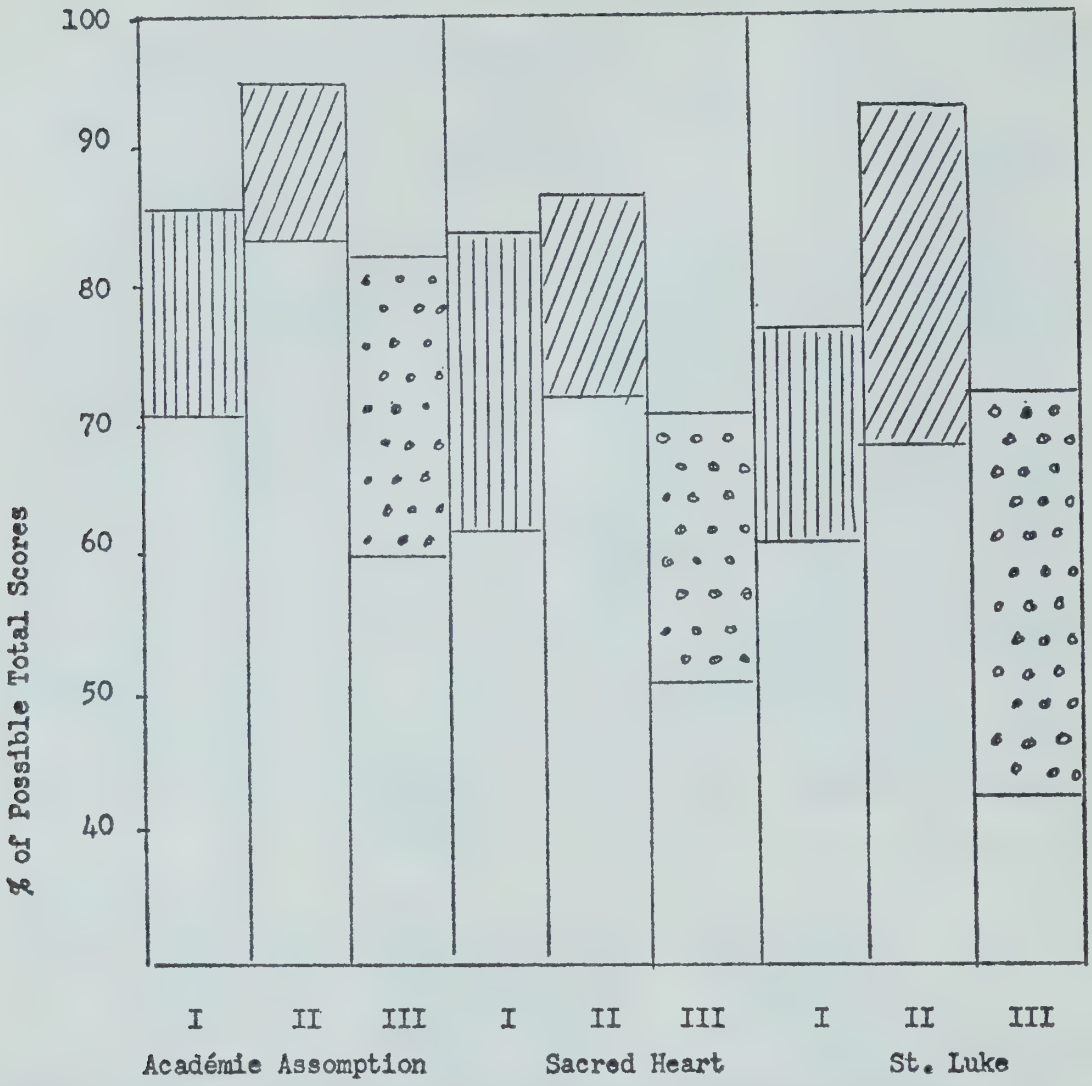

Figure 3.—Histogram illustrating a comparison of the results obtained by the three experimental groups on each section of the Oral Conversation Test.

Section I: Phonetic Accuracy
Section II: Sentence Structure
Section III: Vocabulary

The shaded portions represent the gains revealed by the posttest.

in their present ability to make an impromptu speech of 4, 5 or more sentences was great. The numerous hesitant pauses, marked by 'uh', or 'ah', which characterized the tape-recorded pretest, have disappeared in 70% of the speeches; the remaining 30%, while showing few occurrences of 'uh', or 'ah', showed a marked improvement also. The training the experimentees received during the three-month period, in answering questions orally, in dramatizing dialogues, in making impromptu speeches often, was fruitful.

In Part III Vocabulary, the tape-recorded posttest showed an improvement made by all candidates. A limited number of English

words was used, as compared with the large number employed by the pupils in the pretest. The probable reason may be found in the instrument itself, *Mon Livre de Conversation française.* The thirty lessons were so organized as to provide the pupils with the vocabulary needed in their daily conversations either at home or at school. The intensive learning of a basic vocabulary and of structural patterns, which make available these words and expressions whenever needed, may be a contributing factor for such an improvement. If so, the applied linguistics method used in this experiment proved to be very successful.

Another reasonable explanation may be found in the teaching which was highly motivated by the experiment. It is evident that the instrument, *Mon Livre de Conversation française,* was inert, but it was brought to life by the teachers who were eager to improve the speech of their students. It is possible that the teachers would not have taught with the same zest and insight without the experiment. The same can be said of the pupils who knew that they were part of an experiment and, therefore, put forth more than usual effort because this study had increased meaning and importance.

TABLE I
CORRELATION BETWEEN THE SCORES OF THE THREE PRETESTS

Tests Compared	Correlation Coefficient
Listening Test — Oral Test	$r = .36$
Listening Test — Reading Test	$r = .33$
Oral Test — Reading Test	$r = .67$

TABLE II
CORRELATION BETWEEN THE SCORES OF THE THREE POSTTESTS

Tests Compared	Correlation Coefficient
Listening Test — Oral Test	$r = .72$
Listening Test — Reading Test	$r = .65$
Oral Test — Reading Test	$r = .79$

The measure of correlation used was the Pearson product-moment correlation coefficient. In Table I, the same correlation existed between the Listening Test and the other two tests, namely, .36 and .33. A higher correlation was seen to exist between the Conversational (or Oral) and the Reading test. This may indicate the importance of reading as a valuable aid to enhance conversational skills.

In Table II also a positive correlation existed between the scores of all the skill tests, indicating mutual interrelationship between listening, reading and speaking the French language. As in the pretest, the highest correlation was found to exist between the Conversational and the Reading tests (.67 in the pretest, .79 in the posttest). A 200 percent higher correlation was discovered between the Listening and Oral posttests (.36 vs. .72). This was probably due to the phonetic drills which were included in the speech program. There was also a very good correlation found to exist between the Listening and Reading posttests, even if it were the lowest of the three (.33 raised to .65).

These three higher correlations seem to indicate that the three language skills, namely, listening, reading, speaking, have been greatly improved by the formal teaching of spoken French during the three-month linguistic experiment.

V. Recommendations Resulting From Study

It is hoped that the findings of the present linguistic experiment may encourage others to contribute further techniques designed to improve the speech habits of French-speaking pupils of Alberta. The writer is aware of the limitations of this experiment and would like to suggest the need for all educators to keep informed concerning research trends and findings. Such an open attitude would favor continuous self-improvement, as well as foster better potential achievement in the classroom.

Here are some recommendations resulting from the study:

i. That a few months be set aside each year for an intensive speech training program.

ii. That the applied linguistics method be used to improve the speech habits of French-speaking students.

iii. That the teachers become acquainted with the new trends in language teaching, especially with the applied linguistics method.

iv. That courses be given to teachers in training to familiarize them with the methodology of applied linguistics and prepare them to become efficient langauge teachers.

v. That the French program of studies place much less emphasis on formal grammar and much more on functional grammar.

vi. That a course of oral conversation in French be prepared for Alberta bilingual schools—grades 1 to 12.

vii. That literature and language be adequately differentiated in the French programme of studies; that both be given the consideration and attention they deserve.

viii. That the yearly final examinations given by the AEBA (Association des Educateurs Bilingues de l'Alberta) be thoroughly revised so as to meet the requirements of spoken French, as well as those of written French.

ix. That oratorical contests be organized locally (in each bilingual school) and regionally (in each of the five bilingual regions of Alberta, namely, Edmonton, St. Paul, Bonnyville, Rivière à la Prix, Plamondon).

x. That competent supervisors of French instruction—oral and written—be appointed in each bilingual school system.

xi. That adequate reference materials, books, magazines, (**The French Review, Le Français dans le Monde,** etc.) be made available to bilingual teachers.

REFERENCES

1. Adams, H. and Pollock, T., **Speak Up!** New York: Macmillan Co. 1956.
2. Boulet, G. and Gagné, L., **Le Français Parlé.** Québec: Presse de l'Université Laval, 1961.
3. Decker, Henry, **Intermediate Conversational French.** Toronto: Gage, 1960.
4. Deschamps, Phillippe, c.s.v., **La qualité du française chez certains élèves.** Québec: Ecole de Pédagogie, 1947.
5. Georgin, René, **Le Code du Bon Langage.** Paris: Editions Sociales, 1960.
6. Huebener, Theodore, **Audio-Visual Techniques in Teaching Foreign Languages.** New York: University Press, 1960.
7. **La Langue Parlée** . . . Travaux du XIe congrès de l'ACELF, tenu à Rimouski en 1960. Québec: Editions de l'ACELF, 1960.
8. **Le Parler Français** . . . Travaus du congrès au l'ACELF, à Chicoutimi, 1958. Québec: Editions de l'ACELF, 1959.
9. Nelson, B., **Language and Language Learning.** New York: Harcourt, 1960.
10. Politzer, Robert L., **Teaching French: An Introduction to Applied Linguistics.** Toronto: Ginn and Co., 1960.
11. Lambert, Roland A., "An Experimental Comparison of Two Methods of Teaching French to Non-French students at the Grade Ten Level." Unpublished Master's thesis, The University of Alberta, 1959.
12. Leblanc, René, "An Evaluation of the Phonic Method of Teaching the French I Course Outlined in the Alberta Handbook for Secondary Schools." Unpublished Master's thesis, The University of Alberta, 1936.
13. Sister St.-Sylva, a.s.v.,"An Investigation of the Teaching of French in the Bilingual Schools of Alberta and Saskatchewan." Unpublished Master's thesis, the University of Alberta, 1960.
14. Walker, Bernal E., "A Study of the Reading, Writing, Oral and Aural Skills of French Students in Alberta." Unpublished Master's thesis, 1961.
15. Weldon, Richard C., "A Comparison of French-speaking and Non-French Speaking Students in High School French." Unpublished Master's thesis, The University of Alberta, 1947.
16. Delattre, Pierre, "Comment tester la facilité de le parole dans un laboratoire de langue," **LeFrançais dans le Monde,** No. 3, Août-Septembre 1961.
17. Delattre, Pierre, "Sommes-nous préparés pour l'enseignement de la langue?" **French Review,** April, 1960.
18. Férault, Thérèse, "L'enseignement du français au stade élémentaire," **French Review,** February, 1960.
19. Kurney, Pierre, "Une méthode de conversation," **Le Français dans le Monde,** No. 1, Mai 1961.
20. "Language is Speech—Why not Teach It That Way?" **French Review,** 1960.
21. Leunis, F., "Les fonctions grammaticales chez l'enfant," **La Nouvelle Revue Pédagogique,** Paris, Décembre 1960.
22. Malécot, A., "Oral French Tapes," **French Review,** April, 1960.
23. Twaddell, W. F., "Linguistic Research and Language Teaching," **French Review,** May, 1960.
24. Sr. Simon-Hermann, a.s.v, "A Report on an Applied Linguistics Method Used to Improve the Spoken French of French-Speaking Students at the Grade Seven Level." Unpublished M.E. thesis, University of Alberta, 1962.

BOOK REVIEWS

Educational Achievements of Thirteen-year-olds in Twelve Countries, by the UNESCO Institute for Education, Hamburg, 1962.

The results of an international research study, sporsored by UNESCO, are outlined in this pamphlet. Twelve countries from the same general world culture were represented: Belgium, England, Finland, France, Federal Republic of Germany, Israel, Scotland, Sweden, Switzerland, United States of America and Yugoslavia.

The battery of tests consisted of a non-verbal measure of scholastic ability, and acheivement tests in reading comprehension, mathematics, science and geography. Sampling techniques, test construction and other aspects of the project are described. Professor R. L. Thorndike assumed the main responsibility for data analysis.

Being an exploratory study, no claim is made for its findings other than that they may serve the "double purpose of throwing light on the possibilities of such research, and of obtaining actual results which would, not so much evaluate educational performances under different educational systems in absolute terms, but rather discern patterns of intellectual functioning and attainment . . . " (p. 5). A major conclusion is that the variation between national statistical means is small in comparison to the variability of scores within a given country.

M. A. Nay

The Social Sciences and Educational Administration
Edited by: Lawrence W. Downey and Frederick Enns
Published by: The Department of Educational Administration,

The study of educational administration is increasingly being viewed as an applied social science. Just as medicine and engineering draw upon the basic biological and physical sciences, so administration must select, integrate, and incorporate revlevant knowledge from the various social sciences to improve the base upon which the applied field is built. This perspective, itself, is natural enough as the field of study emerges from its early, more self-conscious stage of development. Operationalizing the perspective, however, involves overcoming some difficult problems both of conceptualization and of technique. These are the problems with which the monograph deals.

The monograph consists of an integrated series of papers presented by prominent social scientists and professors of educational

administration at a conference at Banff in the spring of 1962. Under the sponsorship of the University of Alberta and the University Council for Educational Administration, the conference sought to pool the thinking and experience of universities which had been actively engaged in developing inter-disciplinary graduate programs.

The contributors include Paul F. Lazarsfeld, Columbia University; Neal Gross, Harvard University; Solon T. Kimball, Columbia University; Robert E. Agger, University of Oregon; Daniel E. Griffiths, New York University; Robert L. James, University of Alberta; H. Thomas James, Stanford University; W. W. Charters, Jr., Washington University; Keith Goldhammer, University of Oregon; Luvern L. Cunningham, University of Minnesota; and Lawrence W. Downey, University of Alberta.

The initial concern of the monograph is with the development of a rationale for incorporating the social sciences into educational administration. It then turns to particular social sciences and examines the potential contributions of each. The concluding chapter evaluates the rationale and the techniques which may be employed and outlines some approaches and tentative solutions to major problems which are encountered.

Although the literature contains frequent references to the inter-disciplinary approach to educational administration, the present monograph makes a unique contribution to the totality of its concern, from rationale to curriculum content to instructional technique, and in the academic background and program experience of the authors. It will perhaps be of most central interest to those charged with shaping graduate programs in educational administration. To practitioners and others interested in the field of study, however, it will provide an understanding of the basic direction of development of the study of educational administration.

John Andrews

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